EXHIBIT 3

Corporate governance in South Korea: the *chaebol* experience

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Abstract

Utilizing a large sample of South Korean firms, this paper explores the impact of corporate governance in an emerging market country dominated by a few large business groups. Firms affiliated with the top five groups (*chaebol*) exhibit significantly lower performance and significantly higher sales growth relative to other firms. Furthermore, top executive turnover is unrelated to performance for top chaebol firms, indicating a breakdown of internal corporate governance for the largest business groups. Internal corporate governance appears much more effective for firms unrelated to the top chaebol as managers at poorly performing firms are significantly more likely to lose their job. These results imply that the lack of properly functioning internal corporate governance among the top chaebol, which dominate the Korean economy, may have increased the severity of the recent financial crisis. © 2002 Elsevier Science B.V. All rights reserved.

1. Introduction

The South Korean economy was so devastated by the financial crisis of 1997 that the country was forced to accept a US$58 billion bailout from the International Monetary Fund (IMF) conditional on improving the country's corporate finances as well as both reducing debt and reliance on loans. Recent research has argued that this financial crisis was caused by macroeconomic and banking problems (Johnson et al., 2000). However, these standard arguments fail to explain the variation between East Asian countries as to the severity of the financial crisis. Moreover, these explanations fail to explain why other

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emerging markets in Latin America and Eastern Europe did not suffer to the same degree as East Asian countries.

The functioning of the corporate governance systems of developed economies has been examined in great detail, focusing largely on the United States and Japan.[1] However, very little empirical work has been conducted on corporate governance systems in less-developed markets, which are often dominated by large business groups (Khanna, 2000). An exception to the dearth of work in this area is the growing literature on corporate governance law and the functioning of capital markets around the world.[2] However, this work does not directly examine the functioning of corporate governance in disciplining poorly performing managers or the role of business groups.

Recently, mounting anecdotal evidence points to a breakdown in the unique industrial market structure of South Korea perhaps worsening the financial crisis. Large family run and controlled *chaebol* groups (conglomerates) dominate the South Korean economy. The largest chaebol are widely thought to have led the country into the financial crisis which left the country close to bankruptcy by taking on dangerous levels of debt and diversifying into unrelated, unprofitable businesses. In fact, creditors are currently dismantling the Daewoo chaebol as a result of extremely poor performance. Taken together, these arguments call for a closer look at the corporate governance of the largest business groups in South Korea.

The analysis of the chaebol structure in South Korea is especially important when compared to the keiretsu structure in Japan. The largest five chaebol (Samsung, LG, Daewoo, Hyundai and SK) accounted for 20% of all outstanding debt as well as three-quarters of new borrowing in 1998.[3] The sales of the top five chaebol also contribute almost one-half of Korea's GDP as well as one-half of all exports. In 1987, keiretsu firms accounted for about 17% of sales, 13% of profits and 6% of the total employment in Japan (Kang and Shivdasani, 1995). Therefore, the chaebol system is much more dominant in Korea than the keiretsu system in Japan.

Our paper uses a large sample of South Korean firms from 1992 to 1997 to examine the efficiency and effectiveness of corporate governance in South Korea preceding the financial crisis. We focus on the largest chaebol which are widely thought to have led the country in the crisis. We begin with a comparison of firms affiliated with the top five chaebol and all other firms. Then, we analyze the role of alternative corporate governance mechanisms in determining top executive turnover in South Korea, such as the importance of firm performance, top chaebol affiliation, main bank ties and ownership structure.

Firms unaffiliated with the largest chaebol achieve significantly higher performance and significantly lower sales growth indicating a reversal from studies of previous time periods. Consistent with indirect evidence by Claessens et al. (1999) and Shin and Park (1999), groups affiliated with the largest chaebol seem to have moved to goals unrelated to profit maximization in the 1990s.

Consistent with similar studies (Kaplan, 1994; Kang and Shivdasani, 1995; Gibson, 2000), we find a negative relation between firm performance and turnover when analyzing

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[1] See Shleifer and Vishny (1997) for a review of this literature.

[2] See La Porta et al. (1997, 1998, 1999) and Johnson et al. (2000).

[3] *Economist*, March 27, 1999 and Business Week, December 14, 1998.

our full sample of South Korean firms. These results are significant for three of the five performance variables used in this study and are consistent with properly functioning internal corporate governance in South Korean. The other two measures of performance are also in the hypothesized direction, but not statistically significant.

When examining the impact of group affiliation on corporate governance, we find several interesting results. First, we find no difference in the rate of unconditional top executive turnover between firms affiliated with the top five chaebol and all other firms. Kang and Shivdasani (1995) find nonroutine turnover is less likely for those firms affiliated with a keiretsu. Interestingly, top executives of the top five chaebol (conglomerates) seem to be completely insulated from disciplinary turnover as we find no relation between firm performance and top executive turnover for all measures of performance. In fact, we find a perverse relation between turnover and performance for a number of performance measures. This runs counter to Gibson's (2000) findings in which he groups all firms together without accounting for group affiliation. It also suggests extremely poor internal corporate governance for firms affiliated with the largest business groups in South Korea.

However, we find a significant negative relation between firm performance (measured by both stock market and accounting returns) and top executive turnover for firms not affiliated with the top five chaebol. These results suggest extremely well-functioning corporate governance. The stark differences between the two samples supports the anecdotal evidence that top chaebol suffer from poor corporate governance, which may have increased the severity of the recent financial crisis.

Finally, this paper analyzes other measures of Korean governance structure. Unlike Japanese firms (Kaplan and Minton, 1994; Kang and Shivdasani, 1995), main bank ties do not provide a monitoring function as the relation between turnover and firm performance is unrelated to the existence of a bank as a top shareholder. This result is consistent with the assertion by Johnson et al. (2000), who point out South Korean banks may not have been an effective monitor during the precrisis period. We also find no relation between unconditional turnover and ownership concentration consistent with passive ownership by large shareholders (Claessens et al., 1999; La Porta et al., 1999; Gibson, 2000). We find a consistently negative relation between turnover and foreign ownership consistent with passive ownership by foreigners (Anderson and Campbell, 2001). Finally, for unaffiliated firms, we find a significantly negative relation between turnover and the existence of the top executive as one of the top three shareholders signaling a nontrivial level of managerial entrenchment.

The rest of the paper is organized as follows. Section 2 examines the economic environment of South Korea over our sample period and summarizes the relevant literature. Section 3 describes the data, performance and corporate governance variables, and presents summary statistics. Section 4 presents the results of our analysis on turnover likelihood. Concluding remarks are presented in Section 5.

2. The South Korean economy

As an emerging market dominated by a few business groups, key differences exist between South Korean firms and those in the United States and Japan. This section

provides an overview of the important factors we analyze later in the paper as well as a review of the relevant literature.

2.1. Emerging market corporate governance

As mentioned earlier, the empirical work regarding corporate governance systems in less-developed markets is sparse at best. La Porta et al. (1997, 1998, 1999) and Johnson et al. (2000) focus on corporate governance law and the functioning of capital markets around the world. In fact, Gibson (2000) asserts these papers, focusing on concentrated ownership, test the effects of specific corporate governance *mechanisms*. He argues different corporate governance mechanisms may serve as substitutes to one another further clouding the effect on the corporate governance *system*. Gibson (2000) is the first to examine corporate governance in emerging market countries by observing the relation between firm performance and top executive turnover. The author examines a cross-section of emerging market countries and concludes corporate governance is not *ineffective* as top executives at poorly performing firms are significantly more likely to lose their jobs. Gibson (2000), however, by examining several countries simultaneously, could be missing important country specific variables impacting the efficiency of corporate governance in emerging market economies. For example, Gibson includes South Korean firms in his sample without taking into account the role of business groups.

2.2. Business groups

Khanna (2000) reviews the extant literature on the role of business groups in emerging markets and tentatively concludes group affiliation positively affects performance. However, the author notes a conspicuous lack of empirical research in this area. Khanna and Palepu (2000a,b) examine business groups in India and Chile and find the most diversified business groups outperform all other firms. These results run contrary to studies of U.S. firms (Comment and Jarrell, 1994; Lang and Stulz, 1994; Berger and Ofek, 1995) as well as examinations of the Japanese keiretsu (Weinstein and Yafeh, 1995, 1998) in which diversification destroys value.

Only a handful of published papers examining the role of the chaebol in South Korea exist. Chang and Choi (1988) study 182 publicly traded companies from 1975 to 1984. The authors find that chaebol groups, which are both vertically integrated and conglomerate in nature (i.e., the very largest chaebol), outperform other firms. Choi and Cowing (1999) analyze 252 Korean manufacturing firms from 1985 to 1993. Using a more recent data set, they find no significant differences in profit rates between chaebol and nonchaebol firms in the early 1990s. Shin and Park (1999) find that in spite of the existence of an internal capital market for chaebol firms, these firms invest far more than nonchaebol firms despite poor growth opportunities. Claessens et al. (1999), in examining diversification of East Asian companies, indirectly suggest that diversified Korean companies have allocated capital to less profitable ventures. As diversified chaebol groups dominate Korea, it would seem these groups may have recently chosen an objective other than value-maximization.

2.3. Chaebol

The large conglomerate groups in Korea, known as chaebol groups, developed following the Second World War. The Korean government offered these groups low-cost loans and other incentives to create corporations that could compete globally. In the 1970s, the Korean government concentrated on certain industries (heavy machinery and chemicals) in order to create a competitive advantage. However, this government help was restricted to the top chaebol groups. The chaebol system was extremely successful as the economy grew 20-fold from 1965 to 1985 in terms of GNP (Chang and Chang, 1994). In fact, even in the early 1990s, GNP growth was close to 10%. The founding family members of most chaebol groups have managed to maintain control of these large conglomerates.

This growth continued into the 1990s in spite of the 1980 passage of a competition law and the formation of the Korean Fair Trade Commission (KFTC) to enforce the law. The competition law was created to check the incredible growth of the largest chaebol groups. However, the law had loopholes that kept competition subordinate to industrial policy. As a result, the KFTC rarely took action against the chaebol groups, except to appease politicians (Yoo and Moon, 1999).

However, the business press and Korean citizens have begun to see the largest chaebol groups (most still family run and controlled) as wielding too much power given the incredible wealth inequality that has developed between the chaebol families and the rest of the country. In fact, the largest 10 families in South Korea control around one-third of the corporate sector (Claessens et al., 2000).

Jang Hasung, a well-known South Korean shareholder activist, argues that "corporate governance in Korea is a total mess" and that the existing corporate laws created major obstacles to shareholder activism regarding the largest chaebol.[4] Kim Yu-kyung, Director of International Relations for the Korea Stock Exchange, is also critical of the chaebol strategy. Kim argues the economic environment has changed drastically in the last few years and chaebol groups are not equipped to deal with this new paradigm. This sentiment is echoed by Kim Joon-gi, Professor of the Graduate School of International Studies of Yonsei University, who argues that Korea needs a new corporate governance system consisting of the following attributes: effective checks and balances, enhanced transparency, management accountability and a respected regulatory body.[5] This paper provides evidence regarding the recent anecdotal assertions about the top chaebol.

2.4. Bank monitoring

The Asian financial crisis in 1997 underscored the importance of financial institutions. Johnson et al. (2000) present several commonly accepted reasons for the Asian financial crisis including banking problems. One argument hypothesizes Asian banks made corporate loans with the implicit understanding the government would bail out the banks in the event of default. When these banks recognized the government could not honor

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[4] *Economist*, March 27, 1999.
[5] Korea Herald, October 20, 1999 and Korea Herald, July 21, 1999.

these guarantees, they began taking drastic steps to limit their credit exposure, thus instigating the crisis. Aoki (1990) argues the main bank system in Japan serves an important corporate governance function by disciplining managers for poor performance and recent empirical work supports this assertion (Kaplan and Minton, 1994; Kang and Shivdasani, 1995).

2.5. Ownership structure

Morck et al. (1989) note most emerging market firms are family-controlled, possibly leading to high levels of managerial entrenchment. Shleifer and Vishny (1997) observe a growing literature on the lack of rights for small shareholders in emerging market economies (La Porta et al., 1997). Others posit large shareholders may be passive mutual fund investors and not active monitors (Kang and Shivdasani, 1995; Anderson and Campbell, 2001). As South Korea is a developing economy dominated by a few family-controlled business groups, it makes sense to examine ownership structure.

Foreign ownership of South Korean firms was not allowed until January 1992.[6] Even then, the level of foreign ownership was set quite low (3% for an individual foreigner, 10% for total foreign ownership) and only changed marginally in the following three years (total foreign ownership was raised to 12% in 1994). By 1995, most publicly traded firms had reached the 12% limit. However, beginning in the mid 1990s, South Korea began to drastically liberalize the stance on foreign investment. For instance, the limit on foreign ownership was increased from 12% to 26% by the end of 1997.

3. Data

3.1. Sample

Our initial sample consists of all South Korean firms listed in the Asian Company Handbooks (ACHs) published annually from 1993 to 1999 (the 1995/1996 edition was published as one Handbook). Our sample is taken from this source as opposed to the Worldscope database used by Gibson (2000) for a number of important reasons. First, the ACH gives a brief history of each firm, which allows us to identify those firms affiliated with one of the top five chaebol. Second, the ACHs allow us to obtain a much larger sample to analyze. For example, Gibson's sample of South Korean firms consists of 146 firms and 284 firm years over the 1993–1997 period, while our sample is considerably larger. Third, the ACH lists the top executive of each firm, while Gibson (2000) notes that the Worldscope database lists "several officers for each firm". We assume that the ACH lists only the top officers of each firm; therefore, we face much less ambiguity in defining a *top* executive turnover event. Fourth, Worldscope only lists shareholders that hold

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[6] The information on foreign ownership rules and changes is taken from Geert Bekaert and Campbell R. Harvey's Country Risk Analysis web page (http://www.duke.edu/~charvey/Country_risk/couindex.htm).

greater than 5% of the firms outstanding shares, while the ACHs list shareholders with a much lower stake. This allows us to identify important governance variables, such as top executive stock ownership, ownership by a financial institution and other variables, which tend to be less than 5% for South Korean firms. From the ACHs, we then collect yearly information on top executives, firm performance, chaebol membership, ownership structure and other relevant data for all firms.

Panel A of Table 1 contains the sample description. The initial sample consists of 421 firms and 1463 firm years. First, banks are eliminated from the sample (19 firms and 59 firm years), as governance at financial institutions may be completely different than at industrial firms. As top executive turnover is an important aspect of this paper, we eliminate those firms without consecutive data (46 firms and 89 firm years). The final sample consists of 356 firms and 1315 firm years. Panel B of Table 1 breaks down the data by year and turnover. On average, the fraction of firms experiencing top executive turnover is 25.3%, but varies significantly by year. This fraction ranges from a high of 34.1% in 1995 to a low of 17.8% in 1997, but shows no clear trend over time. These numbers are roughly double the percentage of turnover of Japanese and U.S. industrial firms and banks.[7]

3.2. Measure of firm performance

We use five measures of firm performance to enable us to compare our results with other research. The measures are: (1) three-year stock return net the sample median three-year stock return, (2) return on assets (earnings divided by total assets) net the sample median return on assets, (3) return on equity (earnings divided by equity) net the sample median return on equity, (4) the change in earnings divided by lagged assets, and (5) a negative income dummy variable. Gibson (2000) uses similar measures to compare his results on a cross-section of emerging market countries with Kaplan's (1994) study of large U.S. firms. We also use our results to compare with U.S. banks (Barro and Barro, 1990), Japanese industrial firms (Kaplan, 1994) and Japanese banks (Anderson and Campbell, 2001). Gibson (2000) finds that stock market returns are the only firm performance measurement not significantly related to top executive turnover for any specification.

3.3. Governance variables

Any analysis linking firm performance and turnover likelihood must include several governance variables. These variables are especially interesting to examine in an emerging market dominated by a few business groups.

3.3.1. Chaebol variable

We define a firm as a top five chaebol firm if the Asian Company Handbook lists the company as being affiliated with Samsung, LG, Daewoo, Hyundai or SK. As mentioned earlier, the top five chaebol in Korea account for a disproportionate share of the sales, debt, international trade and have been given the lion's share of government help. Kang and

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[7] See Anderson and Campbell (2001) for a comparison of turnover studies.

Table 1
Sample description

	Number of firms	Number of firm years	Number of firms with top executive turnover	Fraction of firms with turnover (%)
(A) Sample collection				
All firms	421	1463		
Banks	19	59		
Without consecutive data	46	89		
Final sample	356	1315		
(B) Turnover characteristics				
By year				
1992		334		
1993	334	334	95	28.4
1994	300	300	54	18.0
1995	138	164	47	34.1
1996	104	110	31	29.8
1997	73	73	13	17.8
Total	949	1315	280	25.3

The sample consists of all firms listed in the Asian Company Handbooks published annually (except for the combined 1995/96 book) from 1993 to 1999. Top executive turnover is a change in the name of the top executive from the previous year.

Shivdasani (1995) find that unconditional top executive turnover is less likely for firms affiliated with a keiretsu. We use this variable to test the affect of group membership in the very largest chaebol on corporate governance in South Korea.

3.3.2. Bank monitoring variable

We define a dummy variable equal to one if a bank is among the top three shareholders. The role of banks in South Korea has been underscored by the recent financial crisis; therefore, this variable is included to see if banks provide a monitoring role similar to banks in Japan (Kaplan and Minton, 1994; Kang and Shivdasani, 1995).

Notes to Table 2:
The data consists of all nonfinancial firms listed in the Asian Company Handbooks from 1993 to 1999 having consecutive data. All variables are measured in the local currency.

[a] The medians were tested using Wilcoxon median test. The *p*-values are for the *z*-statistic. Means tested using *t*-test; associated *p*-values are shown.

[b] This variable is Winsorized at the 5% and 95% tails. Market-adjusted stock return is the 3-year stock return net the sample median for that time period. Adjusted ROA and ROE are net the sample median for that particular year. Sales growth is the percentage change in sales from last year's fiscal sales to this year's fiscal sales.

[c] Won bil.

[d] The last four rows were tested using Cochran–Mantel–Haenszel χ^2 test of differences. Tests using Fisher's Exact two-tailed test gives similar results (0.375, 0.000, 0.011, 0.000).

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Table 2
Summary statistics

	All firms (n = 859) Mean (median)	Top five chaebol firms (n = 151) Mean (median)	Non-top five firms (n = 708) Mean (median)	p-Values for test for differences in means (medians)[a] Mean (median)
(A) Performance measures				
Market-adjusted stock returns[b]	0.2651 (0.1286)	0.3216 (0.1689)	0.0169 (−0.0986)	0.0000 (0.0000)
Median-adjusted ROA[b] (earnings/assets)	0.0073 (0.0005)	−0.0005 (−0.0039)	0.0089 (0.0024)	0.0005 (0.0002)
Change in earnings/assets[b]	−0.0045 (−0.0015)	−0.0041 (−0.0006)	−0.0045 (−0.0019)	0.8928 (0.3024)
Median-adjusted ROE[b] (earnings/equity)	−0.0007 (−0.0037)	−0.0066 (−0.0093)	0.0005 (−0.0019)	0.2257 (0.0987)
Sales growth[b]	0.133 (0.118)	0.193 (0.183)	0.120 (0.103)	0.000 (0.000)
(B) Firm characteristics				
Sales[c]	920.215 (225)	3149.45 (1332.25)	454.489 (190)	0.0001 (0.0000)
Average total assets[c]	1033.95 (315.18)	2417.81 (1235.90)	744.832 (233)	0.0001 (0.0000)
Average bank debt[c]	163.057 (46.165)	368.236 (181)	124.998 (35)	0.0001 (0.0000)
Average bank debt/total assets	0.2122 (0.1869)	0.1929 (0.1895)	0.2157 (0.1868)	0.1275 (0.3835)
Debt/total assets	0.6953 (0.6832)	0.7503 (0.7351)	0.6839 (0.6733)	0.0834 (0.0000)
Employees	3558 (1464)	9241 (4825)	2376 (1221)	0.0001 (0.0000)
(C) Governance characteristics				
Average % ownership by top three shareholders	28.0% (25.4%)	21.6% (18.0%)	29.3% (26.5%)	0.0000 (0.0000)
Average % foreign ownership	8.0% (9.90%)	9.4% (10.0%)	7.7% (9.8%)	0.0001 (0.0000)
% of firms with top executive turnover[d]	25.3%	28.1%	24.7%	0.372
% with executive as a top holder[d]	38.9%	14.6%	44.0%	0.001
% with Bank a top holder[d]	6.2%	11.0%	5.2%	0.006
% with related company as a top holder[d]	18.2%	46.3%	12.4%	0.001

3.3.3. Ownership structure variables

We define a variable equal to one if a member of the management team is among the top three shareholders. This variable controls for managerial entrenchment. We also include two additional measures of ownership structure. We define ownership concentration as the sum of the shareholdings of the top three shareholders excluding managerial holdings. Finally, we define foreign ownership as the percentage of shares held by foreign investors.

If chaebol affiliation or bank ties play a key role in corporate governance in South Korea similar to Japan, we expect these variables to affect the turnover–performance relation. Therefore, we include interaction terms between chaebol affiliation and bank ties and firm performance. We expect a negative coefficient for these interaction terms for all performance models except the negative income model. For the negative income model, we hypothesize a positive coefficient. For the other governance variables, we are testing if they affect the unconditional likelihood of top executive turnover.

3.4. Summary statistics

Table 2 presents the summary statistics for the sample of firms analyzed in this study. The first column includes overall means (medians) for performance measures, firm and governance characteristics for the full sample of South Korean firms. The second and third columns break down each variable by affiliation with one of the top five chaebol. The final column is tests for differences in means (medians) between firms affiliated with the top five chaebol and all other firms.

Adjusted stock returns are significantly lower for chaebol firms relative to all other firms in our sample. Return on assets (earnings scaled by assets) is significantly lower for chaebol-affiliated firms than for all other firms. Return on equity (earnings scaled by equity) is consistently lower for the group-affiliated firms, and the medians are significantly different from the other firms at the 10% level. The change in earnings scaled by assets measure is indistinguishable when comparing the two samples. Finally, sales growth is significantly higher for chaebol firms indicating the larger group firms are continuing to get larger, but at the expense of profitability.

The performance results show a clear reversal from previous empirical research showing chaebol affiliation led to higher performance. The results are also consistent with the indirect evidence provided by Claessens et al. (1999) and Shin and Park (1999). It seems that the largest business groups in South Korea have chosen rapid growth at the expense of profitability.

As expected, chaebol firms are much larger (sales, assets, bank debt and employees) than the other firms in the sample. Consistent with conventional wisdom, chaebol firms have significantly higher levels of total debt relative to assets. However, bank debt, as a percentage of assets are not different between the two groups.

Unlike previous studies of the keiretsu system in Japan (Kang and Shivdasani, 1995), we find no difference in the unconditional likelihood of turnover between firms affiliated with the top chaebol and all other firms. Unaffiliated firms are more likely to have a top executive as one of top three shareholders and a higher ownership concentration among the top three shareholders. Firms affiliated with the top five chaebol have a higher level of

Table 3
Logit regressions of top executive turnover for all South Korean firms

Explanatory variables	Dependent variable is likelihood of top executive turnover				
Intercept	− 1.786	− 1.381	− 1.662	− 1.563	− 1.668
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted stock return	− 0.212				
	(0.126)				
Adjusted ROA		− 7.312			
		(0.000)			
Δ in earnings/assets			− 0.111		
			(0.960)		
Adjusted ROE				− 2.990	
				(0.001)	
Negative income dummy					0.383
					(0.077)
Size	0.120	0.0558	0.098	0.078	0.091
	(0.041)	(0.297)	(0.055)	(0.130)	(0.078)
χ^2 p-Value (2 DF)	0.018	0.000	0.159	0.001	0.035
Observations	793	949	949	949	949

This table provides coefficients on logit regressions of management turnover on South Korean firm performance. The sample consists of all firms listed in the Asian Company Handbooks from 1993 to 1999 having at least two consecutive data points. Sample size varies with availability of data from the Asian Company Handbooks. Adjusted stock return is the 3-year raw stock return net the sample median. Adjusted ROA is computed as ROA net the median ROA for sample firms in the same fiscal year. Δ in earnings/assets is current year earnings less previous years earnings scaled by previous assets. Adjusted ROE is computed as ROA net the median ROA for sample firms in the same fiscal year. Negative income dummy is equal to 1 if the firm incurs net income less than zero. Size is the log of assets. p-Values are provided in parentheses below the coefficient estimates.

foreign ownership, and a higher likelihood of having either a bank or a related company among the top three shareholders.

4. Analysis of top executive turnover

4.1. Estimates of the turnover–performance relation for full sample

If South Korean executives lose their position as a result of poor performance, we would say that this supports the hypothesis that South Korean internal corporate governance is well functioning. On the other hand, if the penalties to top executives are not determined on the basis of performance, the internal corporate governance mechanism is faulty.

Similar to Kang and Shivdasani (1995), Gibson (2000) and Anderson and Campbell (2001), we do not know if the top executive turnover is a disciplinary event. Gibson (2000), in examining a cross-section of emerging market firms, uses a modified logit regression to account for the uncertainty over the turnover event. Kang and Shivdasani (1995) and Anderson and Campbell (2001) in their studies of Japanese firms define a disciplinary event as one in which the president (analogous to the CEO in U.S. firms) does not succeed the chairman. We have no way of knowing if a turnover event is disciplinary in nature, which

Table 4
Estimated probabilities and sample frequency of turnover

Estimated probability and sample frequency of turnover	Top executive turnover				
	Firm performance measured using				
	Adjusted stock return	Adjusted return on assets	ΔEarnings/ assets	Adjusted return on equity	Negative income[a]
Performance in bottom quartile	− 0.360	− 0.032	− 0.043	− 0.099	1
Performance in top quartile	1.145	0.058	0.029	0.101	0
Probability of turnover in bottom quartile	0.280	0.311	0.249	0.312	0.327
Probability of turnover top quartile	0.204	0.184	0.249	0.194	0.242
Frequency of turnover in bottom quartile	0.268	0.304	0.262	0.308	0.327
Frequency of turnover in top quartile	0.187	0.198	0.232	0.198	0.242

[a] For the negative income dummy, the probability and frequency of turnover are computed using the 0 and 1 dummy variables.

biases our results towards finding no relation between firm performance and top executive turnover.[8]

Table 3 reports the logit regression where the dependent variable is the likelihood of top executive turnover in a given year. The five models test for the relation between turnover likelihood and the different measures of firm performance. The coefficient on adjusted stock return is in the hypothesized direction, but not significant at the 10% level consistent with findings by Gibson (2000). The coefficients on return on assets and return on equity are negative and significant at the 1% level, and the coefficient on the negative income dummy is positive and significant at the 1% level. These results support a clear negative relation between turnover and firm performance, consistent with Kaplan (1994), Kang and Shivdasani (1995) and Gibson (2000). The coefficient on change in earnings scaled by assets is in the hypothesized direction, but not significant.

Table 4 provides estimated probabilities and sample frequency of turnover for each firm performance measure. This table shows the performance and estimated probability of turnover at the 25th and 75th percentile. The effect of firm performance on top executive turnover appears quite large. For example, varying adjusted return on assets from the 75th to the 25th percentile increases the likelihood of top executive turnover by 12.7% (18.4%

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[8] We also do not have access to other potentially important variables, such as executive age, tenure, etc.

to 31.1%). Similar differences can be found for return on equity (11.8%), adjusted stock returns (7.6%) and the negative income model (8.5%). These differences appear much larger than for Japanese industrial firms (Kang and Shivdasani, 1995), U.S. industrial firms (Kaplan, 1994), Japanese banks (Anderson and Campbell, 2001) and U.S. banks (Barro and Barro, 1990).

4.2. Chaebol affect on turnover–performance relation

Table 5 presents the results from the logit regression for all five measures of firm performance based on whether the firm is affiliated with a top five chaebol. The sole purpose of this set of models is to test for differences in the turnover–performance relation

Table 5
Logit regressions of top executive turnover by group affiliation

Dependent variable is likelihood of top executive turnover					
Explanatory variables	Firm performance measured using				
	(1) Adjusted stock return	(2) Adjusted return on assets	(3) ΔEarnings/ assets	(4) Adjusted return on equity	(5) Negative income dummy
Panel A: Top five chaebol					
Intercept	− 1.608	− 1.214	− 1.227	− 1.219	− 0.905
	(0.149)	*(0.249)*	*(0.245)*	*(0.245)*	*(0.390)*
Performance	0.506	1.958	− 0.986	0.343	− 1.797
	(0.168)	*(0.747)*	*(0.856)*	*(0.901)*	*(0.088)*
Size	0.084	0.038	0.039	0.039	0.009
	(0.581)	*(0.793)*	*(0.787)*	*(0.788)*	*(0.948)*
χ^2 *p*-Value (2 *DF*)	*0.340*	*0.916*	*0.949*	*0.957*	*0.093*
Observations	147	164	164	164	164
Panel B: Non-top five chaebol					
Intercept	− 1.846	− 1.330	− 1.711	− 1.552	− 1.661
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Performance	− 0.337	− 8.448	0.324	− 3.418	0.616
	(0.034)	*(0.000)*	*(0.893)*	*(0.001)*	*(0.008)*
Size	0.139	0.046	0.107	0.077	0.082
	(0.056)	*(0.473)*	*(0.082)*	*(0.221)*	*(0.189)*
χ^2 *p*-Value (2 *DF*)	*0.008*	*0.000*	*0.219*	*0.001*	*0.008*
Observations	646	785	785	785	785

This table provides coefficients on logit regressions of management turnover on South Korean firm performance by group affiliation. The sample consists of all firms listed in the Asian Company Handbooks from 1993 to 1999 having at least two consecutive data points. Sample size varies with availability of data from the Asian Company Handbooks. Adjusted stock return is the 3-year raw stock return net the sample median. Adjusted ROA is computed as ROA net the median ROA for sample firms in the same fiscal year. Δ in earnings/assets is current year earnings less previous years earnings scaled by previous assets. Adjusted ROE is computed as ROA net the median ROA for sample firms in the same fiscal year. Negative income dummy is equal to 1 if the firm incurs net income less than zero. Size is the log of assets. *p*-Values are provided in parentheses below the coefficient estimates.

between firms associated with the five top chaebol and all other firms. Panel A runs the same regressions as Table 3, but includes only firms affiliated with the top chaebol. Panel B contains all other firms.

Table 6
Estimated probabilities and sample frequency of turnover by affiliation

Estimated probability and sample frequency of turnover	Top executive turnover				
	Firm performance measured using				
	Adjusted stock return	Adjusted return on assets	ΔEarnings/ assets	Adjusted return on equity	Negative income[a]
Firms in top five chaebol					
Performance in bottom quartile	− 0.451	− 0.024	− 0.036	− 0.078	1
Performance in top quartile	0.678	0.030	0.021	0.073	0
Probability of turnover in bottom quartile	0.228	0.271	0.285	0.274	0.067
Probability of turnover top quartile	0.340	0.291	0.274	0.286	0.302
Frequency of turnover in bottom quartile	0.216	0.195	0.244	0.195	0.067
Frequency of turnover in top quartile	0.333	0.244	0.268	0.244	0.302
Firms not affiliated with top five chaebol					
Performance in bottom quartile	− 0.327	− 0.034	− 0.044	− 0.103	1
Performance in top quartile	1.227	0.062	0.031	0.105	0
Probability of turnover in bottom quartile	0.286	0.318	0.245	0.319	0.367
Probability of turnover top quartile	0.183	0.169	0.287	0.181	0.230
Frequency of turnover in bottom quartile	0.317	0.337	0.235	0.321	0.367
Frequency of turnover in top quartile	0.168	0.173	0.247	0.194	0.230

[a] For the negative income dummy, the probability and frequency of turnover are computed using the 0 and 1 dummy variables.

In Panel A, the firm performance coefficient is only in the hypothesized direction for one performance measure (change in earnings scaled by assets) and is actually perversely significant for the negative income model. These results suggest top executives at group affiliated firms face no threat of dismissal for poor performance. The size variable is never significant for any of the models.

For Panel B, the coefficient on the performance variable is significant at the 1% level and in the hypothesized direction for three performance measures (ROA, ROE and the negative income dummy). Also, the coefficient on the adjusted stock return measure is significant at the 5% level. For these firms, there is some evidence of a positive relation between turnover and firm size as the coefficient is significant at the 10% level in two specifications. These results suggest properly functioning corporate governance outcomes for firms unaffiliated with the top five chaebol. Overall, these results highlight an extreme difference in how South Korean firms are governed.

Table 6 shows the estimated probability of turnover for firms according to chaebol affiliation. For firms associated with one of the top five chaebol, varying adjusted ROA, change in earnings scaled by assets and adjusted ROE has very little impact on the change in turnover likelihood. However, the perverse positive relation is magnified for adjusted stock return and the negative income model as turnover likelihood actually increases significantly for those executives at the better performing firms. The top half of Table 6 underscores the complete lack of a turnover–performance relation for firms affiliated with the top chaebol.

The bottom half of Table 6 presents the estimated probabilities of turnover for those firms not affiliated with a top chaebol. Varying all measures of firm performance, except for change in earnings, from the top to bottom quartile increases the likelihood of top executive turnover. Varying return on assets from the 75th to the 25th percentile increases the likelihood of top executive turnover by 14.9% (16.9% to 31.8%). Similar differences can be found for return on equity (13.8%), the negative income dummy (13.7%) and adjusted stock returns (10.3%). These results suggest extremely effective internal corporate governance for unaffiliated firms.

Notes to Table 7:

This table provides coefficients on logit regressions of management turnover on South Korean firm performance by group affiliation. The sample consists of all firms listed in the Asian Company Handbooks from 1993 to 1999 having at least two consecutive data points. Sample size varies with availability of data from the Asian Company Handbooks. Adjusted stock return is the 3-year raw stock return net the sample median. Adjusted ROA is computed as ROA net the median ROA for sample firms in the same fiscal year. Δ in earnings/assets is current year earnings less previous years earnings scaled by previous assets. Adjusted ROE is computed as ROA net the median ROA for sample firms in the same fiscal year. Negative Income dummy is equal to 1 if the firm incurs net income less than zero. Foreign ownership is the percentage of foreign ownership in the firm. Own. Concentration is the sum of the top three shareholders. Top Manager Own. is an indicator equal to one if an executive is one of the top three shareholders. Bank a top holder is an indicator variable equal to one if a bank is among the top three shareholders of the firm, and zero otherwise. *p*-Values are provided in parentheses below the coefficient estimates.

[a] The bank-performance interaction term is left out of this model because the performance variable for this specification is a dummy variable.

Table 7
Logit regressions of top executive turnover by group affiliation

Dependent variable is likelihood of top executive turnover

Explanatory variables	Firm performance measured using				
	(1) Adjusted stock return	(2) Adjusted return on assets	(3) ΔEarnings/assets	(4) Adjusted return on equity	(5) Negative income dummy
Panel A: Top five chaebol firms					
Intercept	−0.747 (0.186)	−0.530 (0.311)	−0.641 (0.211)	−0.485 (0.358)	−0.432 (0.416)
Firm performance	0.456 (0.268)	8.884 (0.231)	−2.209 (0.749)	−2.254 (0.498)	−1.665 (0.129)
Bank × firm performance	4.472 (0.203)	−2.638 (0.914)	−21.765 (0.284)	12.579 (0.271)	[a]
Foreign ownership	−0.009 (0.859)	−0.037 (0.429)	−0.024 (0.603)	−0.040 (0.398)	−0.045 (0.363)
Ownership concentration	−0.005 (0.692)	−0.000 (0.992)	−0.002 (0.884)	−0.001 (0.939)	0.003 (0.798)
Manager a top holder	−0.009 (0.988)	−0.109 (0.848)	−0.109 (0.849)	−0.111 (0.845)	−0.239 (0.674)
Bank a top holder	−0.311 (0.727)	−0.419 (0.537)	−0.760 (0.328)	−0.822 (0.289)	−0.394 (0.526)
χ^2 p-Value (6 DF)	0.676	0.898	0.858	0.807	0.677
Observations	130	143	143	143	143
Panel B: Non-top five firms					
Intercept	−0.319 (0.306)	−0.547 (0.041)	−0.408 (0.118)	−0.573 (0.034)	−0.514 (0.056)
Firm performance	−0.350 (0.045)	−6.405 (0.017)	0.655 (0.818)	−2.472 (0.038)	0.431 (0.100)
Bank × firm performance	1.090 (0.177)	6.002 (0.705)	9.581 (0.487)	−2.031 (0.744)	[a]
Foreign ownership	−0.045 (0.033)	−0.035 (0.073)	−0.047 (0.017)	−0.035 (0.074)	−0.043 (0.028)
Ownership concentration	−0.003 (0.634)	−0.003 (0.621)	−0.005 (0.424)	−0.003 (0.583)	−0.005 (0.453)
Manager a top holder	−0.779 (0.000)	−0.678 (0.001)	−0.762 (0.000)	−0.697 (0.001)	−0.745 (0.000)
Bank a top holder	−0.290 (0.552)	−0.230 (0.592)	−0.180 (0.671)	−0.209 (0.626)	−0.218 (0.606)
χ^2 p-Value (2 DF)	0.001	0.000	0.002	0.000	0.001
Observations	545	654	654	654	654

4.3. Cross-sectional analysis of turnover–performance relation

Table 7 presents the logit regressions of top executive turnover, which include other potentially important governance variables. Once again, Panel A contains only those firms associated with a top five chaebol. Panel B includes all other firms.

In Panel A, similar to the previous regressions, the firm performance coefficient is insignificant for all performance measures indicating a lack of governance for chaebol firms. The interaction term between bank affiliation and firm performance is also insignificant for all performance measures suggesting banks do not provide the meaningful monitoring role in South Korea that they play in Japan for affiliated firms (Kaplan and Minton, 1994; Kang and Shivdasani, 1995). The coefficients on foreign ownership, ownership concentration, the existence of a manager as a top shareholder and a bank a top shareholder are all insignificant. These results are supportive of inefficient internal corporate governance and imply ownership structure is unimportant for top chaebol firms.

In contrast, firm performance is in the hypothesized direction and significant at the 5% level for adjusted stock returns, adjusted ROA and adjusted ROE. Also, the coefficient is in the hypothesized direction and significant at the 10% level for the negative income dummy. These results once again indicate properly functioning governance of firms unaffiliated with the top chaebol. The coefficient on foreign ownership is negative and significant suggesting passive foreign ownership. This result should not be surprising; as mentioned earlier, foreign ownership is a recent phenomenon in South Korea. Ownership concentration is negative for all performance measures, but insignificant, indicating passive large shareholders in South Korea consistent with other recent research on emerging market countries.[9]

Not surprising, the coefficient on the dummy variable for top executive ownership is negative and significant for all regressions suggesting a high level of managerial entrenchment. Finally, the dummy variable for bank ownership is insignificant indicating that unconditional turnover is completely unrelated to bank monitoring. Estimated probabilities are qualitatively similar to those performed in Table 6 and, hence, are not shown.

5. Conclusions

We provide evidence regarding the role of large business groups dominating an emerging market by studying a large sample of South Korean firms. Contrary to preliminary conclusions regarding business groups in emerging markets (Khanna, 2000), the top business groups in South Korea appear to have negatively impacted the South Korean economy in the 1990s. Specifically, top chaebol-affiliated firms demonstrate significantly lower performance and significantly higher sales growth contrary to previous research. This result is consistent with anecdotal evidence that chaebol firms are interested

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[9] We also created interaction terms for blockholding and firm performance similar to Kang and Shivdasani (1995), but found no significant relation.

in goals other than profit maximization. Also, similar to studies of U.S. and Japanese corporations, the likelihood of top executive turnover is negatively related to firm performance for the full sample of South Korean firms. This finding is consistent with the existence of efficient internal corporate governance mechanisms for the full sample of firms (Gibson, 2000).

However, top executive turnover is completely unrelated to performance for top chaebol firms, indicating a breakdown in internal corporate governance for these business groups. Internal corporate governance appears much more effective for firms unrelated to the top chaebol as managers at poorly performing firms are significantly more likely to lose their job. These results imply that internal corporate governance among the top chaebol, which dominate the Korean economy, may have increased the severity of the recent financial crisis. The results also magnify the extreme differences in which firms are governed in South Korea.

Unlike similar studies of Japan, the sensitivity of top executive turnover to firm performance is unrelated for firms with bank ties. Financial institutions in South Korea do not appear to play an effective monitoring role. Also, we find evidence consistent with passive ownership by large domestic entities as well as foreigners. Finally, we provide results consistent with managerial entrenchment when a top executive is also a shareholder.

Overall, these results suggest that extremely poor corporate governance of the dominant chaebol may have worsened the impact of the financial crisis in South Korea in the late 1990s. These results are consistent with anecdotal evidence provided by both the business press and corporate governance experts in South Korea.

Acknowledgements

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EXHIBIT 4

Chaebols, the conglomerate groups responsible for South Korea's widely admired economic growth, possess unique corporate values. These, along with their distinct diversification strategies, are closely examined by the authors.

Korean Chaebols: Corporate Values and Strategies

SANG M. LEE
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South Korea has been making headlines as the "Miracle on the Han River," the "Small Dragon," and the "Second Japan." Despite a lack of natural resources, South Korea has bounded into the world market and emerged as one of the world's newest, most dynamic economic powers — not to mention the world's 15th richest nation. Korea exports more than 250,000 automobiles and 200,000 personal computers to the United States annually. Over the past two decades its annual growth rate in terms of gross national product (GNP) has been 9% and exports have increased 30% — the highest increase and growth rate in the world for that time span. By achieving $70 billion annually in exports, with a surplus in ordinary balance of more than $9 billion a year, Korea is now among the world's top ten exporters. Today, Korea's per-capita income has reached $5,000 — up from a meager $82 in 1961.

It is clear that strong leadership, sound economic planning by the government, and the prodigious productivity of Korea's workers are important elements in this remarkable economic boom. As one Japanese executive said, "The Koreans are the only people who still work hard." Skilled and diligent workers have been an especially important driving force behind economic success. According to the International Labor Organization, the Korean work week averages 54.4 hours — the highest in the world. However, the real catalysts in Korea's economic success have been the efforts of the private business sector, especially those of the chaebols (Korean conglomerates or financial cliques).

The Bank of Korea reports that the total earnings of Korea's top 30 chaebols will reach $200 billion — about 95% of the nation's GNP — in the 1990s. Clearly, the state of the Korean economy reflects the success of the chaebols; as a result, these groups have piqued international interest. In this article we shall examine the corporate values and strategies unique to chaebols.

KOREAN CHAEBOLS

Korean chaebols — e.g., Hyundai, Sam

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Exhibit 1
THE 20 LARGEST CHAEBOL GROUPS IN KOREA AS OF 1988

Rank	Group	Chairman	Year Founded	No. of Affiliates
1	Samsung	Kun Hee Lee*	1938	25
2	Hyundai	Sae Yung Chung**	1950	2
3	Lucky-Goldstar	Ja Kyung Koo	1947	26
4	Daewoo	Woo Choong Kim	1967	25
5	Sunkyong	John Hyon Choy	1953	14
6	Ssangyong	Suk Won Kim	1954	13
7	Hanjin	Choong Hoon Cho	1945	12
8	Hyosung	Suk Rai Cho	1957	19
9	Korea Explosive	Seung Youn Kim	1952	20
10	Kia	Kyung Joong Min	1944	9
11	Doosan	Yong Kon Park	1952	16
12	Lotte	Kyuk Ho Shin	1967	22
13	Dongkuk Je Kang	Sang Tae Chang	1954	14
14	Kolon	Dong Chan Lee	1957	14
15	Dong A	Won Suk Choi	1945	18
16	Daerim	Jae Joon Lee	1939	11
17	Dongboo	Jun Ki Kim	1964	11
18	Kumho	Sung Yong Park	1972	6
19	Hanil Hapsum	Joong Won Kim	1964	6
20	Miwon	Dae Hong Lim	1956	16

Source: Edited from *The Daily Economist*, March 8, 1990.

* Kun Hee Lee succeeded his father, Byung Chull Lee (the founder), upon the latter's death in 1987.

** Sae Yung Chung succeeded his older brother, Ju Yang Chung, the founder of Hyundai Group who retired in 1986.

sung, and Lucky-Goldstar — emerged as major corporations during the late 1950s. The formation and growth of such conglomerates accelerated between the early 1960s (e.g., Hanjin, Korea Explosive, Hyosung, Ssangyong, and Dong-A) and the early 1970s (e.g., Daewoo, Sunkyong, Lotte, Kolon, and Doosan). The 20 largest chaebal groups are shown in Exhibit 1. Korean chaebols are often compared to "zaibatsus" (the Japanese equivalent of chaebols), which first appeared when Mitsubishi was formed in 1893. But because chaebols were formed later, they have developed

and grown in quite different ways in terms of ownership, culture, and strategy.

The following observations reflect some general characteristics of Korean chaebols:

• Although they have been criticized for their "Octopus Arm" style of expansion (characterized by aggressive infringement in the operational areas of small businesses, a lack of business ethics, and a concentration of wealth in small, select groups of people), chaebols have been the backbone of Korean economic growth.

• Ownership and management are not   37

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separate in most Korean chaebol groups. Each is managed by a family, though the proportion of professional managers has been increasing considerably.

• Top-down decision making is common in many Korean chaebol groups.

• Many Korean chaebols adopt certain tactics, such as gaining advantageous new family ties through marriage, to secure their existence and to maintain the family's dominance in management. According to one survey, there have been 21 marriages among the family members of the top 10 chaebols.

• Because chaebols have had a relatively short history, many founders still hold top management positions. The question of succession, then, assumes a special importance because chaebols, which were formed according to the tenets of Confucianism, owe much of their success to the unique Korean family concept.

• Most Korean chaebols also owe much of their success to government support. A close relationship with the government has almost always been a prerequisite for a chaebol's survival and success.

• The expansion of most Korean chaebols has been largely based on government policy, with the primary goal of increasing total sales volume rather than profitability.

• The management practices of Korean chaebols reflect many of their unique characteristics.

The economic power of Korean chaebols is impressive. Recently, 11 chaebols were ranked in "The *Fortune* International 500" list. The ten largest have total sales of over $130 billion, or more than 80% of the country's GNP. The total exports by eight general trading companies owned by the eight largest chaebols constitute over half of all Korean exports. Among the 50 largest companies in Korea, 30 are owned by the ten largest chaebols (see Exhibit 1).

Of course, many factors have contrib-

uted to the successful development of chae-bols. Highly visible assets such as financial aid from foreign sources, government sup-port, enthusiastic management, and the obvi-ous hard work of employees have been named by some authors. However, no one can deny that another important force behind the chae-bol's success has been its unique culture, com-bined with its corporate identity, leadership, and strategy.

CORPORATE VALUES OF
KOREAN CHAEBOLS

To the chaebols, corporate culture con-tributes a set of written or unwritten rules, beliefs, norms, guidelines, philosophies, or patterns to be followed by members of the organization. This concept is so strongly im-bued that any member who fails to abide by it usually experiences feelings of guilt, isolation, or a general sense of failure to "keep up". Such feelings are formed by the pressure — both in-ternal and from other organizational mem-bers — to conform to the ideal culture.

Corporate values work in mysterious ways. Ostensibly they spur job performance and satisfaction while instilling a sense of pride in belonging to a unique "corporate fam-ily". And, indeed, they are powerful motiva-ting tools in Korea. The values of Korean firms differ from those of their American and Japanese counterparts because of Korea's Confucian social fabric. This added cultural component in their management strategies helps them humanize the business machine. Rationalism alone is insufficient to optimize management efficiency; thus corporate value/ identity is a requirement. Creativity and self-development, harmony and solidarity, and sincerity and diligence are the organizational values most frequently emphasized among Korean firms. There is no great difference be-tween excellent firms and other firms in terms of the organizational values emphasized.
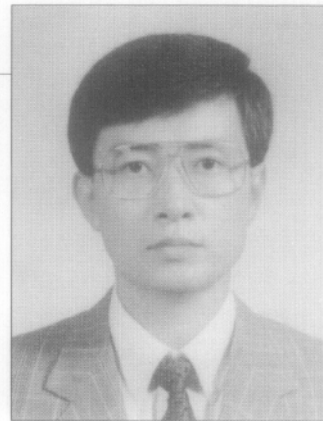
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Korean firms spend enormous amounts of time and effort in securing their corporate values. For example, they stress finding out during job interviews how well newcomers will fit the company mold and adapt to the company's culture. Exhibit 2 shows the personality traits that Korean corporations, especially chaebols, look for when they interview new college graduates. After employment, Korean firms secure the employee attitude they want by means of a corporate anthem, corporate uniforms, corporate magazines, and continuous training.

The following sketches of corporate culture at some top Korean chaebols are designed to show how their organizational values and identities are formed and expressed.

Daewoo Group. To survive in the organization Daewoo employees must make themselves at least as busy as the chairman. Moreover, they are not given any specific assignments unless this is necessary. No one teaches new employees what to do; they must find out what to do and how to do it on their own. The challenge and creativity emphasized at Daewoo spring from Chairman Woo Choong Kim's belief that "with no action nothing can be accomplished."

Chairman Kim admits that he is the busiest man at Daewoo and has little time to spend with his family. Thus the same is expected of other employees, for the benefit of both the country and Daewoo, employees' surrogate family. To compensate for such sacrifice, Daewoo offers many fringe benefits — like all-expenses-paid, three-day trips for employees to celebrate their wedding anniversaries — in addition to salary and regular bonuses.

It is Daewoo's custom to pair up a new male recruit with a female employee for his on-the-job training. The high rate of marriage between employees, especially in the Trading Division, is attributable to this practice, which is known as "jjakji," or "couple." Because of Daewoo's relatively short history,

Exhibit 2
KOREAN CHAEBOLS' PERSONALITY CRITERIA FOR EMPLOYMENT

Chaebol Groups	Newcomers' Personality
Samsung	Positiveness, execution with determination, responsibility, self-motivation
Hyundai	Creativeness, thrift and diligence, future-oriented
Lucky-Goldstar	Harmonious relationships with others on the job, creativeness, foreign language, personal relationship
Daewoo	Aggressiveness, progressiveness, sense of duty
Ssangyong	Harmonious relationships with others on the job, personal relationship
Korea Explosive	Harmonious relationships with others on the job, sincerity, honesty, personal relationship
Hanjin	Creativeness, responsibility, effectiveness
Hyosung	Sincerity, endeavor, responsibility
Doosan	Sincerity, thrift and diligence, harmonious relationships with others on the job
Lotte	Physical and mental soundness, adaptability, motivation to achieve
Dongboo	Spiritedness, agressiveness, future-oriented
Kolon	Harmonious relationships with others on the job, personal relationship, self-motivation
Kumho	Sincerity

Source: Edited from *The Korea Times*, October 8, 1986.

there is no nepotism to hinder the flow of young energy and ambition at the corporation. Daewoo is often thought of as a paradise for young, aggressive people.

Hanjin Group. Although Korean Air Lines (KAL) is not the only member of the Hanjin Group, in many ways its corporate culture sets the standard for most of Hanjin's subsidiaries, which are largely in the transportation field. KAL's emphasis is on "servicemanship," which is so critical to their success that all employees are expected to act as civilian diplomats. Polished manners, refined language, and warm smiles are their trademarks. The KAL male must wear a dark-blue suit (no sports jacket); female employees are strictly forbidden to wear blue jeans even when they are off duty. As unofficial diplomats, they are further required to master a foreign language in order to go abroad at least once, just to provide them with an international perspective.

KAL employees look forward to competing with the best of foreign airlines. KAL workers are proud of working for the world's tenth largest airline. Creativity and progressiveness are the two other qualities that have carried the founder and chairman, Choong Hoon Cho, down the road to success. A former truck driver, he is now the "Korean Onassis." The group's prevailing attitude is that a business, especially a transportation business, soon becomes obsolete if it fails to move forward. Consequently, employees are asked to move ahead and not to look back. Patriotism and serviceship are what the employees of Hanjin, the only corporation in Korea specializing in transportation, are supposed to possess.

Hyundai Group. Although the group's name means "contemporary," the typical Hyundai man is far from contemporary. He wears either a blue or a gray soldier-like uniform and, in compliance with company rules,   41

keeps his hair trimmed short, over the ears. Hyundai's corporate culture was developed by the founder and former chairman, Ju Yung Chung. He wanted his employees to be aggressive, just as he was and still is. The strength of Hyundai lies in the young men who willingly follow their commander in the hope of becoming a latter-day Chung.

Another virtue stressed at Hyundai is frugality. The former chairman's frugality is legendary. Although he managed a business that recorded sales approaching $30 billion in 1989, he still lives in an unpretentious home and shuns "luxury" hobbies like golf. His attempts to implant his idea of frugality include forcing his employees to save 30% to 40% of their salaries.

Since the group's major fields of business are construction and heavy industry, both of which require an aggressive and enterprising attitude, people who lack this attitude are screened out during the hiring interview or later on. Once a male applicant is allowed to work at Hyundai, he is trained to immediately acquire the Hyundai spirit through intensive training programs which, among other things, include physical exercise designed to build a man's "Tooksim," or physical endurance. There is little question that Hyundai's success is directly attributable to its unique brand of leadership, despite some criticism that Hyundai's principle of tenacity is often too rigid to react flexibly to the complicated nature of modern times.

Lucky-Goldstar Group. Perhaps the first thing that generally comes to mind about Lucky-Goldstar is that entering it is much easier than leaving it. As the group's motto, "Inhwa Dankyul" (or "Harmony and Solidarity") implies, the group has an almost religious devotion to developing the concept of harmony for the benefit of society as well as for the group's employees. Intermarriage among the two families involved—the Koos and the Huhs—is regarded as a 40-year-long honey-

moon. Indeed, the process of selecting a successor when the late chairman In Hoe Koo died without a will was accomplished without any family feuding among the five brothers and six sons. Lucky-Goldstar is an excellent showcase for the spirit of harmony.

Such an approach to harmony, which has its origin in the Confucian emphasis on relationships among people, is occasionally challenged by young employees who regard it as absurd and irrational to have a promotion system based on seniority rather than performance. Complaints are also made about the group's decision-making apparatus, which emphasizes unanimity and prudence. But there is a special awareness at Lucky-Goldstar of the dangers of overemphasizing harmony; doing so, it is reasoned, could lead to a tolerance of irresponsibility—and thus mediocrity.

Despite a gradual change in the emphasis on harmony, the corporation's philosophy of business based on humanism is unlikely to change fundamentally. The top brass and the chairman stand behind the idea that harmony made Lucky-Goldstar transform itself from a small company making cosmetic cream in the 1940s to what it is now.

Sunkyong Group. In a 1985 survey, college graduates cited Sunkyong as the most desirable company to work for   and not only because Sunkyong's starting salary for new college recruits is the highest among all Korean business groups. Many also believe that Sunkyong's unblemished image appeals to such graduates. Sunkyong's character has a certain neutral flavor; it has managed to prosper untouched by the scandals and rumors of power struggles.

When Sunkyong undertook its 12-year sponsorship of a TV quiz show for students, the longest-running program in Korea, the intent was not to score points with students but to educate the audience about the importance of education. The group's future-oriented phi-

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losophy that was behind the sponsorships is also behind Sunkyong Chemical's recent development of polyester film, videotapes, and floppy disks.

Long-term planning and futuristic strategy paved the way for another success story when Sunkyong took over ownership of Yukong Ltd., an oil refinery, in 1982. Nearly all of the other Korean chaebols wanted to acquire Yukong, too—but Sunkyong won out because its chairman, Jong Hyon Choy, had first set his sights on the petrochemical industry in 1973 and had been preparing for years for a take-over opportunity.

Mr. Choy, who studied chemistry at the University of Wisconsin and economics at the University of Chicago, regards education as the most precious resource in running a business. Every Sunkyong employee undergoes an intensive training program, called the Sunkyong Management System, which stresses management techniques as well as the corporation's philosophy on education and the future.

In most cases, an organization's corporate culture—especially when it comes to organizational values and corporate identity—reflects the personal beliefs of top management (usually the founder or the chairman) and its prescriptions for employee conduct. These beliefs and prescriptions are often glorified as the most desirable virtues; eventually they become known as corporate culture. As we saw in Exhibit 2, Korean firms' organizational values or corporate identities rely excessively on abstract concepts quite contrary to those of American and even some Japanese firms. Korean corporations stress such intangibles as harmony, challenge and power, or determination, while the cultures of U.S. corporations find visual and symbolic expression in logos, slogans, and rituals. But such concrete manifestations have little meaning for Korean employees, whose cultural tradition is introspective and not necessarily explicit.

The Korean people look for something beyond simple dedication to techniques that rationalize management and maximize profits.

The success stories of Japan's zaibatsus are built on their employees' strong loyalty and willingness to adopt the prevailing corporate norms and values. Korean chaebols' success can be traced to the same source—employee loyalty to the corporate family and employee self-sacrifice for company and country. No one can deny that one of the most important driving forces behind the success of Korean chaebols has been their unique corporate culture based on the social fabric of Confucianism. The oriental tradition of emphasizing human relations complements the often mechanical corporate structure whose origin is Western.

CORPORATE STRATEGIES OF KOREAN CHAEBOLS

Many companies can devise new strategies that make sense from a financial, product, or marketing point of view—yet often they cannot implement these strategies, which require assumptions, values, and ways of working that are too far out of line with the organization's traditional assumptions. Thus corporate culture seems to be worth accepting as an important part of strategic management, both in theory and in practice, for at least two reasons: (1) It has a strong impact on the success of the company and (2) it can make a significant contribution to the creation and maintenance of a strategic fit.

As previously discussed, a strong corporate culture can guide the decisions and behavior of individuals in an organization. In this respect, corporate culture is able to produce a strategic fit by providing (1) direct information about the necessary behavior in a particular situation, (2) implicit norms, and (3) a supply of cases for analogy. Corporate culture in Korean chaebols is no excep-

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tion. Each chaebol's unique corporate culture and objectives, the industry involved, the market served, and the founder's management philosophy affect the process of planning, development, and implementation of business strategies. In terms of management style, for example, Korean corporations—like their Japanese counterparts—emphasize teamwork, employee participation, minimal levels of hierarchy, consensus decision making, and the corporation-as-family philosophy. However, they implement these ideas in much more flexible ways than do their Japanese counterparts. They also run their businesses with unique goals and objectives.

To operate successfully, a corporation should have recourse to many different kinds of strategies—certainly strategies involving products, marketing, production, R&D, personnel, finance, purchasing, and diversification. Korean corporations generally take approaches similar to those of Japanese or U.S. firms in most strategic decisions—diversification excepted.

In Korea, diversification or investment decisions concerning important industries are made by the Korean government, and this was particularly true during the earlier stages of economic development (before the early 1970s). Thus private corporations have followed the government's directions or arrangements without demur in order to be included in the targeted growth industries. It is clear that the Korean government's leadership in economic development policy and the close relationship between government and business are responsible for Korea's phenomenal economic growth. However, this early "traffic control" by the government gave the chaebols a good excuse for their later "Octopus Arm" type of expansion.

Now that we have reviewed the Korean chaebols' corporate culture and corporate values, it is important to note that most Korean chaebol corporate strategies, including

diversification strategies, were developed in accordance with their predefined corporate values.

Diversification

The product and the market are a firm's two most important strategic elements. To maintain continuous growth, a firm needs to increase its market share, introduce new products, penetrate new markets, implement vertical integration, and/or implement unrelated diversification. Diversification strategy can be defined as "entering into a new product/market which is usually unrelated to the firm's existing product/market to expand the firm's business opportunity." Usually, a new product/market requires a great deal of such corporate resources as new production facilities and technology, a new marketing system, new or additional personnel, and additional financial investment. Thus the firm experiences enormous loss if the diversification strategy fails to produce expected results. However, it is clear that this strategy is very attractive for fast growth.

An industrial corporation that decides to diversify its product line is making a strategic decision, the consequences of which may alter the firm's fundamental nature and may involve a substantial redeployment of resources and redirection of human energy as well. Diversification, however, is neither a goal nor a plan. After deciding on the total amount of diversification that is appropriate, a firm must choose the types of business to enter and then decide on the degree to which it will (1) build them on the basis of its existing strengths and competencies or (2) develop entirely new ones.

Typically there are three basic reasons for a firm to diversify:

1. Entrepreneurial diversification. When there is a gap between the firm's goals and its actual performance, it diversifies the prod-

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uct/market to make up the gap that exists.

2. Surplus-resource-driven diversification. A firm diversifies the product/market to find new opportunities when business opportunities in the current industry are limited even though the firm has surplus resources.

3. Problem-driven diversification. A firm is forced to diversify its product/market when it encounters unexpected changes, especially such unfavorable ones as the evolution of strong, new competitors; government rules and regulations; and a scarcity of raw materials in its business environment. This may be the most risky diversification strategy.

In *Strategy, Structure, and Economic Performance*, Richard Rumelt categorized diversification according to five classes based on specialization ratio (SR), or the proportion of a firm's revenues that can be attributed to its largest single business in a given year; related ratio (RR), or the proportion of a firm's revenues attributable to its largest group of related businesses; and vertical ratio (VR), or the proportion of the firm's revenues that arise from all by-products, intermediate products, and end products of a vertically integrated sequence of processing activities. The five classes are:

1. Single business. In this category are firms that are basically committed to a single business. Among nonvertically integrated firms (VR 0.7), single-business companies are those with specialization ratios of 0.95 or more. Among vertically integrated firms (VR 0.7), those that have an end-product business that contributes 95% or more of total revenues are also classified as single business.

2. Dominant business. Firms that have diversified to some extent but still obtain the preponderance of their revenues from a single business fall into this category. Among non-vertically integrated firms, those with specialization ratios of greater than or equal to 0.7, but less than 0.95, are dominant-business firms. Among vertically integrated firms,

those that do not qualify as a single-business firm fall into the dominant category.

3. Dominant unrelated. This category belongs to nonvertical dominant business firms in which the preponderance of the diversified activities are unrelated to the dominant business.

4. Related business. This category is reserved for nonvertically integrated firms that have primarily accomplished diversification by relating new activities to old so that the related ratio is 0.7 or more; they also have specialization ratios of less than 0.7.

5. Unrelated business. This is the category for nonvertical firms that have diversified chiefly without regard to relationships between new business and current activities. Such firms are defined by a related ratio of less than 0.7.

Exhibit 3 analyzes the diversification strategies of 108 large Korean business groups according to Rumelt's classification scheme. As the exhibit shows, "unrelated business" is the most typical diversification strategy among the top 20 chaebols. But for business groups ranked 21 through 80, the more popular diversification strategies are "dominant unrelated" and "related business." "Single business" and "dominant unrelated" diversification strategies are the choices of low-ranked business groups (those ranked 81 through 108). Overall, the "dominant unrelated" strategy was the top choice in 1984 for diversification among all 108. It was followed by "related business," "unrelated business," "single business," and "dominant business."

Growth and Diversification Strategies

A brief review of the growth strategies of Korean chaebols will shed light on their diversification strategies. Here is a summary of the corporate strategies of several top Korean chaebols.

Daewoo Group. Daewoo Silup, which   45

Exhibit 3

SUMMARY OF DIVERSIFICATION STRATEGY OF TOP 108 KOREAN BUSINESS GROUPS

Rank* 1 = tops	Single Business	Dominant Business	Dominant Unrelated	Related Business	Unrelated Business
1–10			1	1	8
11–20		2	2	1	5
21–50		2	9	12	7
51–80	4	5	10	8	3
81–108	8	2	11	4	3
Total	12	11	33	26	26

* Rankings are determined by total sales volume.

Source: Edited from "Growth Strategy and Management Structure of Korean Firms," Korea Chamber of Commerce & Industry, Seoul, Korea, 1987, p. 85.

was established in 1967 with capital of about $5,000, became one of the top five chaebols in only two decades. As of 1988, Daewoo had more than $15 billion in annual total sales with about 100,000 employees. Daewoo's rapid growth can be attributed to strategies and structures that stem from the founder's management philosophy — creativity, progressiveness, and the Daewoo emphasis on sacrifice. The group has a dual organization structure.

The backbone managerial structure at Daewoo is based on executives' linkage through a common high school or university. Mutual ownership among affiliates, rather than family, is Daewoo's unique ownership structure.

During the inauguration and development stage (1967-1975), Daewoo expanded its business by emphasizing exports — especially textile products. The strategy was greatly rewarded by the government's export-drive policy. Later in the stage, Daewoo attempted to grow into other industries such as leather, machinery, security, and construction (rather than textiles) by taking over some insolvent enterprises. Making firms profitable again has become a Daewoo trademark.

During the transition and growth period (1976-1981), Daewoo jumped into heavy industries such as overseas construction, shipbuilding, machinery, and automobiles by establishing new firms or, again, taking over insolvent enterprises. Its growth during this period was lightning-fast, even though its take-over strategy was often criticized as "enterprise hunting." To reform its image, Daewoo declared a new beginning of the group in 1982 in order to effectively handle oil shortages and Korea's turbulent political climate.

Since then, Daewoo has enjoyed a second period of rapid growth as the result of the following major strategies:

1. To strengthen competitiveness by adopting advanced technologies in existing heavy-industry business and then to jump into new areas such as banking, electronics, semiconductors, and telecommunications to make them the group's core business.

2. To encourage joint ventures in order to better handle foreign firms' unwillingness to provide technology transfer.

3. To concentrate on industries that have high value-added ratios.

It is too early to tell whether Daewoo will be successful with these strategies. However, everyone believes that it will continue to be successful as long as Chairman Woo Choong

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Kim's philosophy – "We do not work for lei-
sure but for satisfaction" – holds sway.

Hyundai Group. The Hyundai Group is
the prototype of success in the Korean busi-
ness environment. Hyundai has achieved
enormous success by effectively combining
these strategies: resiliently adapting to envi-
ronmental changes, maintaining good rela-
tionships with the government, and staying
progressive. An anecdote illustrates the reck-
lessness and persuasive powers of its former
chairman, Ju Yung Chung: He supposedly re-
ceived a shipbuilding order from overseas by
providing only a picture of the shipyard's
scheduled construction site.

Since the establishment of Hyundai Con-
struction Company in 1947 with nothing but
Chang's experience and credibility, Hyundai
has become one of the top Korean chaebols;
in 1988, it had more than 100,000 employees
and annual sales of over $27 billion. For some
time after its founding, Hyundai concentrated
exclusively on construction-related business;
later it began to diversify. The driving forces
behind Hyundai's success have been em-
ployee loyalty to the company and Chairman
Chung's ability to instinctively foresee the
future.

During the 1970s, Hyundai became the
top chaebol in Korea as a result of the Middle
East construction boom – a position clinched
by its successful bid for the Jubail Industrial
Harbor Complex in Saudi Arabia in 1976.
With its accumulated wealth and the govern-
ment's policy of encouraging heavy industry,
Hyundai began to diversify into such noncon-
struction businesses as shipbuilding, automo-
biles, and trade. After the political turbulence
during 1979 and 1980 and a recession in the
construction and shipbuilding business, Hy-
undai entered the semiconductor and com-
puter industries. Although the results of these
diversification strategies have been nothing
to boast about, they enabled Hyundai to ac-
cumulate experience and acquire enormous

latent power. Moreover, the unbelievable
success of Pony automobiles in Canada and
Excel automobiles in the United States appear
to be leading Hyundai to a promising future.

Kia Motors Corporation. Kia Motors is
the core company of the Kia Group. Ever
since the company was founded in 1944, Kia
has spared no effort to develop the domestic
automobile industry. The company, which
started in bicycles, went on to concentrate
on cargo trucks, utility vans, special vehicles,
and military vehicles for the domestic market.
In 1987 it started to produce passenger cars.
The company penetrated the U. S. market for
the first time in 1947 through Ford dealerships
with the "Festiva." Unlike other large chae-
bols, Kia has concentrated on a "dominant-
related business," automobiles in this case,
since its establishment.

In 1982, the Kia group almost went bank-
rupt. Hence the owner decided to give up his
ownership and, for the sake of survival, dele-
gated management of the group to nonfamily
members. The professional managers sur-
mounted the crisis successfully, and the inci-
dent became known as the "Korean Chrysler
Story." Now most of the group's CEOs are
professional managers, and all the Kia em-
ployees believe they can climb to the top if
only they work hard enough.

Like other companies in the automobile
industry, Kia has put heavy emphasis on
R&D – some 5% of Kia's sales revenue is rein-
vested. The company intends to penetrate
more foreign markets while maintaining a sta-
ble level of domestic market share to better
handle fierce competition with front-runners
Hyundai and Daewoo. A comment from the
CEO reflects this move: "Kia owes its success
to the support of its customers and the affili-
ated businesses that have pursued domestic
growth with us. Now, with 40 years of accu-
mulated experience and technology, Kia is
reaching out to the world."

Korea Explosive Group. When reports   47

appeared that the Korea Explosive Group (KEG) would be taking over the Jung-A Group, which was built around a leisure business and retail chain, and also would be establishing a professional baseball team and joining the profitable instant-noodle market, more than a few cynical eyebrows were raised. To many, KEG's business expansion went against the current, especially since other business groups headed by experienced tycoons were consolidating to improve efficiency, competitiveness, and financial structure by selling unrelated and unprofitable subsidiaries. The KEG, however, is headed by a young, less experienced, second-generation tycoon.

Mr. Seung Yun Kim became chairman of KEG when his father died in 1981. In the 1970s, when expansion was the norm among businessmen, KEG was the exception. Under the leadership of the late chairman, KEG concentrated its business in trading, refining, and explosives. The winds of change, which altered other business groups beyond recognition, simply did not affect the conservatism of the late chairman. However, soon after assuming the chairmanship of KEG, the young Kim began acquiring and diversifying. The government also played a part in KEG's new expansion.

Adhering to Confucian teachings, which call for respect for elders, Kim rarely appears in public. Unlike many Korean tycoons who prefer to give orders rather than listen to divergent opinions, Kim prefers to listen to his experienced executive staff. His decision to invest $6.5 million on R&D in fine chemicals, energy, genetic engineering, and new materials development is good evidence of attentive listening in an effort to overcome KEG's main weakness — the absence of a focus on high technology.

Lucky-Goldstar Group. The Lucky-Goldstar Group was established as a small cosmetics manufacturer in 1947. Today, with 26 af-

filiates and 60,000 employees, it has annual sales of over $24 billion. During the group's formation stage (1947-1969), Lucky-Goldstar ventured into such new businesses as insurance, electronics, refineries, and chemical products. Most of Lucky-Goldstar's products — such as toothpaste, cosmetic soap, polyvinyl chloride (PVC) pipe, radios, telephones, washers, and television sets — were the first ones developed and produced in Korea, all in accordance with the founder's pioneering spirit to do what others don't.

After Ja Kyung Koo assumed the chairmanship, upon the late chairman's death in 1970, Lucky-Goldstar experienced a rapid growth period until 1979. During this period, the group diversified into such new areas as trading, mining, financial services, retailing, telecommunications, semiconductors, and construction. This expansion was fueled not only by the group's new strategies, but also by the Korean government's export-drive policy. Then the political turbulence in 1979 brought about changes both in the business environment and in the international trading environment — changes that forced Lucky-Goldstar to change as well. The group decided to put greater emphasis on technology- or capital-intensive businesses rather than labor-intensive ones. Thus Lucky-Goldstar has since been successful in high-tech areas including electronics, microcomputers, robots, fiber-optic cable, semiconductors, new materials, and genetic engineering.

Unlike its rivals, Lucky-Goldstar has not been dependent on foreign markets; only one-third of its turnover comes from exports. Instead, it has been one of the strongest groups based on domestic markets. Like other chaebols, it is widely diversified, but most of its products are consumer oriented. However, the chairman sees the group's future in the internationalization of its business, and he believes that technology is the major factor that will ultimately separate the winners from

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the losers. Accordingly, he is interested in attracting foreign technology, developing overseas resources, and transferring any applicable technology.

The chairman believes that good human relationships are as important as dollars and wons, and the group's corporate values reflect this belief. Whether it is management-labor relations or cooperation with foreign firms, the group is guided by the oriental philosophy of "inhwa," which literally translates as "harmony in human relations." Inhwa means mutually beneficial relationships between workers and the group's partners. Despite critics who charge that inhwa leads to tolerating idleness and/or irresponsibility, it has been a major driving force of Lucky-Goldstar's prosperity and it probably will continue to be.

THE NEW CHALLENGE

Despite the chaebols' impressive economic accomplishments, the 1990s will prove to be crucial years in determining their future success. South Korea is currently in a recession that some are calling an emergency, even a crisis.

Moreover, such experts as Koo Bo Ho, president of the Korea Development Institute, have expressed concern regarding the "speed of South Korea's slowing growth." Indeed, the present 6.6% growth rate is the lowest since 1981. Productivity, which rose 18.9% in 1987 and 13.4% in 1988, trickled to a mere 0.6% during the first ten months of 1989. Profits from the 30 largest chaebols also dropped in the first half of 1989, leaving South Korea's trade surplus at $175 million — far below its former high of $5.3 billion.

In an about-face, the same factors that influenced Korea's rapid development are now contributing to slower growth. That is, the government has decreased its heavy support in many areas as public hostility toward

the monopolistic chaebols has mounted; the won has appreciated enough to make U.S. sanctions a looming possibility; and some chaebols are even being investigated for alleged tax evasion or speculation in the real estate market. In fact, most chaebols have been ordered to sell land holdings that are not essential to their business operations. However, strained management/labor relations and labor discontent in particular are mostly responsible for dulling Korea's competitive edge. Five years ago, Korean wages were below those of Mexico. But strikes and high union demands during the past two years have pushed labor costs 70% higher, for an average of $634 per month; it is estimated that work stoppages incurred $4.5 billion in losses in 1989 alone.

I-Chon Han, chief of the Planning Office at the Economic Planning Board, worries that Korea will have an even lower growth rate — 5% — if labor unrest continues. A recent *Wall Street Journal* article that commented on increased conspicuous consumption by wealthy families projects an even less optimistic growth — 4%. In addition, consumer prices could increase by 10%, and that increase, plus the new inflationary effects of higher wages, could eventually create the first deficit since 1986.

Experts have determined that Korea's best course of action is to continue to follow the Japanese model. Streamlining industry will be an important strategy. Many chaebols are already increasing their focus on foreign markets in such areas as conductors, robotics, and aerospace. In addition, chaebols intent on future survival will be forced to invest more heavily in quality control and research and development to acquire higher state-of-the-art technologies. The December 1989 *Korea Newsreview* notes that the government is planning to back this strategy with reduced tax rates for high-tech investments. Other companies have sought cheap labor where it   49

is still available and set up production in countries such as Thailand, the Philippines, Indonesia, and Mexico, thus pushing the chaebols farther into the multinational category.

Continuing success for the chaebols will depend on their determination and ability to cope with new struggles on their own as the government continues to wean them in favor of smaller enterprises. This turn of events makes chaebols, most of whom still view themselves as infants, seem uneasy. Cha Hak Koo, chairman and CEO of Goldstar's electronics unit, laments, "We are a small and weak company."

CONCLUSIONS

Korea, a country with old traditions, is also a newcomer in the competitive world of industrialized and rapidly developing countries. As one official stated, "For the first time in its 5,000-year history, Korea has the chance to become a fully industrialized nation." The successful staging of the 1988 Summer Olympics in Seoul was but one symbol of this emerging Korea. Although it is clear that strong leadership and the government's sound economic planning have been important driving forces behind Korea's remarkable economic growth, the real catalysts of the nation's economic success have been the efforts and the creativity of the Korean business community.

Although Korean chaebols have relied on their unique corporate values and strategies to help them manage and grow successfully, they may not be able to continue to count on these and other factors favoring their success. For one thing, many Korean chaebol leaders trained by the Japanese are being replaced by new generations educated mostly in the United States. For another, chaebols are too large to be managed by members of a single 50 family. And finally, more innovative labor

relations efforts will be required, along with heightened international competition and protectionism. All these factors imply that experience, aggressiveness, and intuition are no longer sufficient for success in the dynamic and complex business environment.

It is time for Korean chaebols to review their corporate goals, values, and strategies to better equip themselves to operate effectively in the new environment. As two old Korean proverbs advise, "You can rule the world only after your own house is in order," and "You can know new facts by reviewing old ones." After carefully reviewing their old set of corporate goals, values, and strategies in light of emerging environmental variables, the Korean chaebols may be able to establish a new set that will make them even more successful in this dynamic and difficult environment.

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EXHIBIT 5

The relationship between South Korean chaebols and fraud

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Abstract

Purpose – In recent years, many of South Korea's most prominent organizations have been involved in large-scale frauds. These frauds have had a devastating impact on South Korean society and resulted in unnecessary suffering and high levels of unemployment for the middle class. With the aim of understanding the causes of these scandals, this paper takes an in-depth look at the chaebol organization.

Design/methodology/approach – The paper takes a conceptual approach by first examining chaebols in greater detail. The paper then examines classical fraud theory, including the fraud triangle. The paper then examines chaebol organizations through the lens of the fraud triangle. By doing so, it is possible to understand why chaebols, in particular, are susceptible to fraud and corruption.

Findings – The paper provides evidence to suggest that chaebol organizations have inherent fraud risks. In order to minimize these fraud risks, chaebol organizations must address these issues.

Originality/value – This paper fulfills an important area of research by providing basic information about the relationship between chaebol organizations and fraud.

Keywords Fraud, Corruption, Financial reporting, Conglomerates, South Korea, Bribery

Paper type Conceptual paper

> We must accept the notion that in order to make our nation an advanced economy, it is a life-or-death task demanded by the times to secure transparency and credibility for business (Chae Dong Wook, Senior Public Prosecutor in Hyundai Case in *The Xing Sting*, 2008).

Introduction

During the last few decades, South Korea has established itself as an example of economic success for developing countries throughout the world. As a result of the country's powerful economic development, South Korea along with Hong Kong, Singapore, and Taiwan have been referred to as the Four Asian Tigers. Central to South Korea's success has been the chaebol system. The chaebol system has been credited for the country's economic development and for transforming the country from an exporter of cheap products to a major global player (Paik, 2006; Haggard *et al.*, 2003; Amsden, 1989). Unfortunately, in recent years, many of South Korea's most established chaebols have been accused of fraud of various forms. While scholars have studied many aspects of the chaebol organization, few studies, if any, have explored the relationship between chaebols and fraud.

Chaebol organizations are entrenched with the values and customs of South Korea and, as such, are a microcosm of South Korean society. In 1995, the five largest Korean chaebol organizations in South Korea were Hyundai, Daewoo, Samsung, LG Electronics, and SK Global. Since this time, four of these five firms have been accused

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of fraud, including SK Global, Hyundai, Daewoo, and Samsung. These frauds have stunned the world and questioned the very integrity of the chaebol organization framework. Some scholars have even suggested that the financial scandal at Daewoo was a main contributor to the Asian Financial Crisis of 1997 (Kim, 2000).

Chaebols first became prominent in South Korea in the early 1960s and 1970s (Jung, 1989). At this time, large firms in South Korea worked as engines for fast economic growth (Yoo and Lee, 1987). Chaebols received government support and protection. They were granted exclusive rights and monopolistic access to resources. The South Korean government also provided the chaebol organizations with financial assistance, low interest rates, tax benefits, foreign exchange allocations, import and export licenses, and foreign investment incentives (Lee, 2000). In return, the chaebols provided jobs, foreign currency, and the opportunity for Korea to be visible in world markets. Today, chaebols are largely controlled by their founding families and are very centralized in ownership (Kienzle and Shadur, 1997). Chaebols are very similar to other large corporations in developing countries (Leff, 1976, 1978; Granovetter, 1995).

The emergence of the chaebol organization

Until the 1980s, the relationship between government and business in South Korea was an interdependent relationship. This relationship was very closely held, with the state dominant over businesses (Lee and Han, 2006). In the 1970s and 1980s, the government selected certain chaebols to undertake projects and channeled funds for these projects from foreign loans. The government would guarantee repayment if for any reason the company was not able to repay its creditors. If additional loans were needed for these projects, domestic banks would make the loans. This was the case until the late 1980s when the chaebols became multinational businesses, and were too large to remain under the control of the state. Many chaebols had become financially independent and the government was no longer needed for credit and assistance. It was at this turning point in history that the chaebols began to have considerable economic and social influence in South Korea and in the new global market.

The interdependent relationship that gave the state dominance over business for many years was suddenly reversed with the state now dependent on the chaebols. The 1980s brought new problems between the chaebols and the state. The economy had matured so much that chaebols were creating excessive and redundant industrial capacity, and thus, the chaebols became a burden to the economy. As a result, the government created laws and institutions to curb various anti-competitive practices of the chaebols. At the end of the 1980s, the chaebols began to actively expand their businesses in the international market and further diversify in various markets and industries. Chaebols had an increased political role as chaebols continued to supply funding for politicians (Noland and Pack, 2003). Chaebols continued to move away from the state as capital markets became a viable option for the chaebols. This credit typically came in the form of short-term, speculative capital (Kang, 2000). As the chaebols moved away from government assistance, they became part of the global market. This exposure to the global market began to expose cracks within the chaebols, including corporate governance weaknesses.

In 1997, Asia entered one of its most devastating crises to date known as the Asian Financial Crisis. The crisis had an immediate impact upon South Korea's society and, within days, exploited weaknesses in the South Korean economy. As a result, the South Korean banking sector quickly became bankrupt and the country's currency became unstable. Without the support of the South Korean banks, the chaebols turned to the

South Korean government for help. The government tried to remedy this situation by using foreign reserves. This had an effect similar to putting fertilizer on weeds – it lowered the value of the won and exacerbated the currency crisis. The country faced a liquidity crisis, and foreign banks refused to roll over short-term foreign credits to Korean financial institutions (Corsetti *et al.*, 1998). When the government recognized the problem and sought to remedy it, the conventional macroeconomic tools became ineffective and only induced more capital inflows, further depressing the economy. On November 21, 1997, Korea was forced to abandon the country's currency – the won. On December 3, South Korea agreed to a large IMF loan program of $57 billion, with additional resources from the World Bank, the Asian Development Bank, and other countries in the region (Haggard, 2000).

Until the late 1990s, chaebols played such an important role in the South Korean economy that the state was reluctant to allow large chaebols to fail (Hundt, 2005). This guaranteed continued existence of already established chaebols gave them freedom from market forces. Chaebols no longer had to do what the market demanded, nor did chaebols have to make sound market decisions – they had the support of the state. In August of 1999, the bankruptcy of Daewoo group marked a new era for chaebols. The government at that time, lead by Kim Dae Jung, would indeed allow chaebols to fail. Chaebols no longer had a guaranteed existence and they would no longer be granted special political favors. While the "guarantee of the state" was greatly diminished after the Asian Financial Crisis, many executives continued to have the mindset that they were too big to fail and that the state would only allow them to incur limited financial damage.

Fraud theory

To fully understand why chaebol organizations are susceptible to fraud, it is necessary to first understand classical fraud theory. Classical fraud theory states that there are three common elements to all frauds:

(1) a perceived pressure;

(2) a perceived opportunity; and

(3) rationalization (Sutherland, 1949; Cressey, 1953; Albrecht *et al.*, 2008).

These three elements combine into what is known as the fraud triangle (Figure 1). Whether the dishonest act involves fraud against a company, such as when an employee misappropriates funds on a massive scale, or fraud perpetrated on behalf of a company, such as is the case with financial statement manipulation, these three elements are always present.

Every fraud perpetrator faces some kind of perceived pressure. Most pressures involve a financial need, although non-financial pressures, such as the need to report

Perceived Pressure

Fraud Triangle

Perceived Opportunity   Rationalization
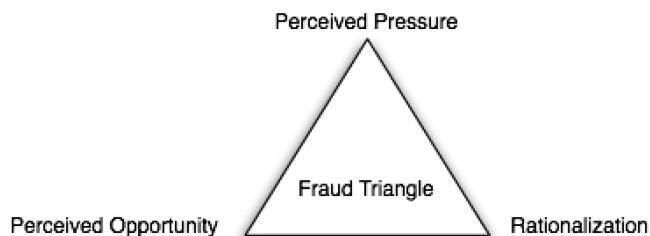
Figure 1.
Fraud triangle

results better than actual performance, frustration with work, or even a challenge to beat the system, can also motivate fraud. Examples of perceived financial pressures that can motivate fraud involve greed, living beyond one's means, high bills or personal debt, poor credit, personal financial losses, the need to meet short-term credit crises, inability to meet financial forecasts, and unexpected financial needs.

Fraud perpetrators must have a perceived opportunity or they will not commit fraud. Perceived opportunities to commit fraud include such factors as a weak board of directors, inadequate internal controls, or the ability to obfuscate the fraud behind complex transactions or related-party structures. Other factors that create an opportunity to commit fraud include a lack of or circumvention of controls that prevent and/or detect fraudulent behavior, the inability to judge the quality of performance, failure to discipline fraud perpetrators, lack of access to information, ignorance or apathy and incapacity, and the lack of an audit trail.

Fraud perpetrators must have some way to rationalize their actions as acceptable. For corporate executives, rationalizations to commit fraud might include thoughts such as "we need to keep the stock price high," "all companies use aggressive accounting practices," "it is for the good of the company," "we can't let the company fail," or "we will only borrow the money for a short period of time" (Albrecht *et al.*, 2004).

These three elements in the fraud triangle are interactive. For example, the greater the perceived opportunity or the more intense the pressure, the less rationalization it takes for someone to commit fraud. Likewise, the more dishonest a perpetrator is and the easier it is for him or her to rationalize deviant behavior, the less opportunity and/or pressure it takes to motivate fraud.

Fraud in chaebol organizations

The fraud triangle provides insight into why recent frauds occurred in chaebol organizations. In the following section, we provide a short background on each of the four chaebols that have been accused of fraud in the last decade.

Daewoo
Kim Woo Choong founded Daewoo, meaning "great universe," in 1967 with $10,000 of assets. By the company's fourth year of business, Kim had exported textiles worth $4 million. This once small textile house later turned into the second-largest industrial conglomerate in Korea generating $50 billion of annual sales in products ranging from cars and ships to pianos and televisions. At one point, Daewoo had operations in 110 countries, controlled 393 subsidiaries, had more than 152,000 employees, and produced roughly 10 percent of South Korea's gross domestic product. As the company continually attempted to expand and achieve its' slogan of "$50 billion in exports" it became involved in excessive borrowing, which swelled to $70 billion in debt (Irvine, 1999).

In 1998, the Daewoo group was accused of committing the single greatest large-scale accounting fraud to date in Asia. Daewoo concealed this fraud by selling assets above their stated book value to affiliate companies, and then booking the capital gain as profit. Daewoo also covered up failed ventures and created a London-based slush fund. The collapse of Daewoo in 1999 exposed a stone under which all sorts of accounting abuses had been breeding. As a result, Daewoo was forced to break up the company. Kim was accused of inflating Daewoo's assets by 41 trillion won (about $41 billion) and taking assets from the company worth nearly 10 trillion won. The 19 Daewoo executives put on trial claimed they falsified financial records on orders from Kim Woo-Choong (Burton, 2001). In April 2005, seven former Daewoo executives were sentenced to jail for up to

seven years (EIU News Wire Asia, 2005). Daewoo has been cited as a prime example of the poor corporate governance that afflicts many Korean companies.

During the court proceedings Mr Kim attempted to justify his actions by describing them as management decisions and as part of a widespread practice of his time (Choe, 2006).

SK Global

SK Global was officially established as Sunkyong Textiles in 1953. For many years, Sunkyong Textiles was a producer of woven textiles. However, as the company grew, and as a result of various acquisitions and mergers, Sunkyong Textiles changed names several times eventually becoming SK Corporation in 1998. SK Corporation was a large conglomerate involved in many industries including oil, telecommunications, textiles, petrochemicals, and various commodities. One part of the SK Group was SK Global. SK Global's main business included energy sales and trading. SK Global was heavily dependent on sales with other company affiliates.

In late 2002, J.P. Morgan discovered several irregular option trades. After an initial investigation by the Seoul District Prosecutors' Office, chairman Chey Tae-won was arrested on February 22, 2003. At this time SK Group was the country's third-largest conglomerate. By March 2003, accounting irregularities were announced totaling $1.3 billion. By manipulating the shares of SK affiliates, Chey gained control of the group's key enterprises. Chey and others had cheated minority shareholders while they strengthened their secret grip on the business. When prosecutors charged Chey of attempting to siphon funds from stronger affiliates to keep weaker affiliates going, Chey maintained that such acts are common corporate practice (Moon, 2003).

The SK Global case highlights some of the practices of prominent business families using tiny stakes to win enormous power within companies. After three months in jail, Chey returned to be the executive director of SK Group. Sovereign Asset Management, SK Corporation's largest single investor tried to replace key management with no success. SK Global is one situation where convicted Korean criminals sit on boards, many times for the same companies they had previously cheated (Leahy and Marshall, 2004; Myrick, 2004; Fifield and Guerrera, 2005).

Samsung

Lee Byung Chul founded Samsung on March 1, 1939. Since that time, the company has grown to become one of the largest organizations within South Korea, with operations in almost every sector. While the success of its electronics and telecommunications business has made it a respected competitor globally, Samsung is also a world-class player in semiconductors, financial services, autos, and aerospace. The company produces a wide range of products including memory chips, computer and color television picture tubes, glass bulbs, digital televisions, printers, monitors, mobile phones, and other products.

In 2006, a government inquiry was made into Samsung. Allegations included a slush fund to politicians as well as the illegal transfer of shares from Mr Lee Kun Hee to his son Lee Jae Yong. In 2005, two executives of the chaebol were convicted of arranging convertible bonds that allowed Samsung Chairman Lee Kun Hee's children to buy 64 percent of a holding company at less than one-tenth of the market value (Moon, 2006). It was also revealed that in the 1997 presidential elections in the USA, Samsung used the country's future ambassador to channel bribes to candidates – actions that helped ignite a serious political scandal (*Financial Times*, 2005).

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Hyundai
In 1946, Chung Ju-Yung bought a piece of confiscated land in the middle of Seoul with a few friends. In the following year, 1947, Chung Ju-Yung founded Hyundai Engineering and Construction Company. Hyundai Motor Co was later established in 1967 (see Hyundai, 2008).
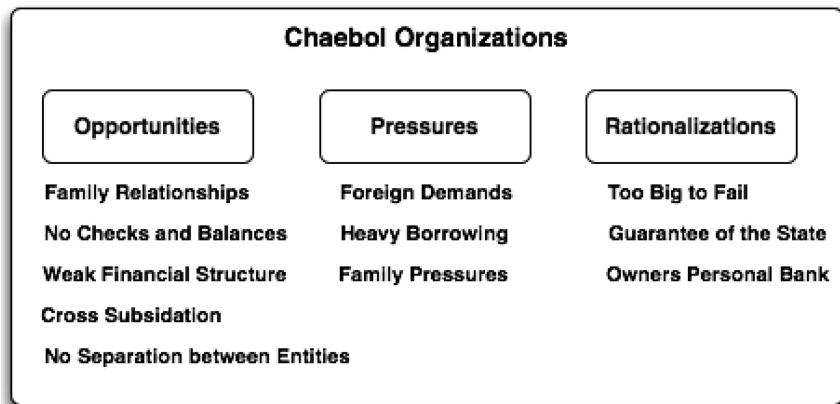
Hyundai and Ford Motor Company began to work together and by the 1970s, Hyundai had developed its first car, the Pony. By the mid-1990s, Hyundai had produced more than 4 million cars. By the year 2002, Hyundai set sales records in both the UK and the USA. By 2003 Hyundai had grown into a major conglomerate and was forced to split into five business entities including Hyundai Motors Group, Hyundai Group, Hyundai Department Store Group, and Hyundai Development Group.

In 2003, officers of Hyundai Motors logistic subsidiary, Glovis Co, were arrested on charges of embezzling more than $6.73 million. Hyundai motor was also suspected of corruption by paying for political influence with politicians and local government officials. In addition, the company's charismatic chairman, Chung Mong Koo, was arrested on April 28, 2006, for inflicting damages worth more than $400 million to the group through irregular deals aimed at benefiting his family at the expense of other shareholders. He was also accused of raising some $140 million in illegal funds to pay political bribes (Moon, 2006). In June 2006, Chung Mong Koo stated, "I admit my guilt, to a certain extent." During the court proceedings, Mr Chung also apologized for his wrongdoings blaming them on his drive to create a global car firm (Litterick, 2006).

Discussion of the frauds
While scholars (Haggard *et al.*, 2003) have attempted to understand the relationship between chaebol organizations and fraud by analyzing chaebols from a bankruptcy reform, foreign direct investment, competition policy, and corporate governance perspective, we attempt to illustrate this relationship through process and structural analysis. The existing chaebol system has several weaknesses when analyzed through the lens of the fraud triangle. Figure 2 further illustrates these weaknesses.

Opportunities for fraud to occur within chaebol organizations include close family relationships, a lack of checks and balances, a weak financial structure, cross-subsidizing, weak corporate governance, lack of transparency, lack of public and regulatory oversight, and a lack of independence between entities within the organization. Checks and balances refer to the systems that are put in place to ensure

Chaebol Organizations

Opportunities	Pressures	Rationalizations
Family Relationships	Foreign Demands	Too Big to Fail
No Checks and Balances	Heavy Borrowing	Guarantee of the State
Weak Financial Structure	Family Pressures	Owners Personal Bank
Cross Subsidation		
No Separation between Entities		

Figure 2.
Opportunities, pressures, and rationalizations of the chaebols

that power is not abused. This can be done in both the internal controls of the organization as well as in the regulatory structure of the market.

Limited public and regulatory oversight at Samsung created the opportunity for Mr Lee Kun Hee to illegally transfer shares to his son Lee Jae Yong. Limited oversight also created the opportunity for the children of Samsung's CEO Lee Kun Hee to purchase 64 percent of a holding company at less than one-tenth of the market value. The lack of transparency at Hyundai allowed the opportunity for Hyundai executives to pay for political influence with politicians and local government officials.

However, perhaps the single largest opportunity for fraud to occur within chaebol organizations has been the lack of independence between entities. For example, Daewoo concealed large amounts of fraud by selling assets above their stated book value to affiliate companies, and then booking the capital gain as profit. If the entities had been truly independent, the opportunity for this type of fraud to occur would have been minimized. Furthermore, because of a lack of independence between entities, Daewoo was able to cover up and hide failed ventures. Similarly, because of a lack of independence between entities, SK Global was able to manipulate the shares of SK affiliates, providing an opportunity for Chey to gain control of the group's key enterprises.

Obtaining hard evidence that describes the rationalizations that are used in fraud is often difficult to obtain. As a result it is difficult to know the exact rationalizations that were used by executives at Hyundai, Samsung, SK Global, and Daewoo. This is a common limitation in all fraud research as many individuals, even after conviction, claim innocence and are unwilling to share their rationalizations for committing the fraud. As a result, it is somewhat difficult to create a direct link between the fraud risk factor of rationalization and the four chaebol cases described above.

However, even with this limitation, we can assume that some of the common rationalizations of company leaders to commit fraud within chaebol organizations included the belief that the conglomerates were too big to fail, the guarantee of the state – regardless of performance or action, and the acceptance of company executives using the organizations as their own personal piggy banks. Many executives also accepted fraud as being within the established "cultural social norms" for South Korea. Norms have been described as an informal guide of what is considered to be the average social behavior of a given social group, and the existence of "authentic ethical norms" (e.g. Sanders, 2004; Furnham, 1987; Donaldson, 1994). Here ethics is *per se* descriptive in nature and is a study of morality and how to reason given a specific set of rules and principles that determine right and wrong for a specific group (Crane and Matten, 2004).

As is the case with rationalizations, understanding and obtaining hard evidence and information regarding the pressures that influenced individuals to participate in fraud is often difficult to obtain. However, we can assume that pressures within the chaebol organization included foreign debt covenant demands, family pressures, heavy overseas borrowing, and other financial demands. Perhaps the greatest pressure for fraud may come from the pressure that South Korean culture and family relationships place on success.

In the last few years, chaebol organizations have taken numerous steps to improve their corporate governance systems. For example, Hyundai has filled four of its seven board seats with outside directors and similar changes have been implemented within most other chaebol organizations. SK Group, for example, has also appointed

independent board members. However, many of the founding families continue to wield incredible influence within most chaebol organizations (Moon, 2006).

A study of 250 Korean companies belonging to the 38 largest family-run conglomerates showed a quarter of them had records of irregular deals aimed at enriching the family at the expense of public shareholders in the past ten years (Moon, 2006). The common method for transferring money to a founding family is known as "an usurpation of corporate opportunities." This process involves a family establishing an unlisted company, often in the name of the chosen heir or the chaebol chieftain. The chaebol then guarantees lucrative deals from profitable affiliates. These intra-group deals generate prosperous revenues to the newly created company. When the company goes public by selling its shares, the heir sells the company and then buys shares in the flagship company of the chaebol to assume control. Such was the situation when Eui Sun, the son of Chairman Chung, set up Glovis company with less than $5 million. By obtaining exclusive shipping contracts from Hyundai and Kia, Glovis was able to profit $82 million in 2005. If Glovis had not been created, profits from shipping Hyundai and Kia vehicles would have benefited all shareholders not just the Glovis company (Moon, 2006). Through these strategic, but unethical acts, families are able to keep control of the chaebol organization within the founding family.

As discussed previously, the three elements of the fraud triangle are interactive, meaning that the greater the perceived opportunity or the more intense the pressure, the less rationalization it takes for someone to commit fraud. Understanding which of the three elements of the fraud triangle has the most significant impact on fraud within the South Korean chaebol system would be extremely beneficial. By understanding which element of the fraud triangle is the most powerful influence to motivate individuals to participate in fraud, regulators, educators, and others can implement strategies to curb fraud in South Korea.

However, within the scope of this paper it is difficult to identify the one element that seems to have the most significant impact on fraud. While opportunities for fraud to occur would seem to be the most powerful influence, it is difficult to know the affect that national culture and norms have on the elements of pressure and rationalization.

Conclusion, limitations, and future research
The purpose of this paper has been to bring an alterative perspective to the current literature on chaebol organizations. While culturally rich, the ever useful-for-growth chaebol system does not justify the frequent occurrence of fraud in chaebol organizations. By analyzing the four largest chaebol organization's scandals, we can better understand the cultural roots of their growth, including their corruptive acts. Consistent with the fraud triangle, chaebol organizations have many inherent fraud risks including opportunities, pressures, and rationalizations for fraud to occur. Within the chaebol organizations, family prominence, with its lack of independence, plays an important factor for both opportunity and social pressure. Most chaebol founders worked hard to start their organizations and help them achieve success, but then used fraudulent means to keep ownership within their families.

While all four of the cases presented in this paper involved financial scandals of various types, there are many similarities and differences between the four cases. For example, it should be noted that while the scandals at Daewoo and SK Global involved accounting irregularities, the scandals at Samsung and Hyundai involved political scandals. More specifically, Daewoo was involved in a classical financial statement fraud of inflating assets by selling assets above their stated book value to company

affiliates. Similarly, SK Global was involved in accounting irregularities and manipulating irregular options trades. Unlike the SK Global and Hyundai scandals, the scandals at both Samsung and Daewoo included slush funds. It is also important to realize that the scandals at Samsung and Hyundai were perpetrated for personal or family enrichment.

Many of the scandals that have occurred within South Korean society were viewed as smart financial movements rather than unethical corrupt acts. While we do not know the extent that this cultural view had on individuals rationalizations to perpetrate the fraud within the four chaebol cases described above, we do know that it was a contributing factor. Furthermore, we believe that cultural rationalizations such as this significantly impact the likelihood of fraud in cultures throughout the world. While research on the impact of culture on fraud is somewhat limited, this is an important area for future study. Whether cultural sensitivity to fraud constitutes a sufficient condition for fraud to occur is also difficult to assess within the scope of this paper. However, this would also be an interesting area for future study.

As long as leaders and employees of these organizations consider fraudulent acts as acceptable, frauds will continue. In the case of SK Global, for example, after serving prison time, the CEO returned to his previous position as director of the organization, suggesting an acceptance by others within the organization of the fraudulent acts. This cultural acceptance and its effect on fraud provide an interesting avenue for future research. Watson (2003), for example, has suggested that even though some fraudulent acts are always considered universally to be unethical, there are other fraudulent acts that in one culture may be considered as a legitimate social practice. Watson (2003) also refers to a complex philosophy of fraud based upon two concepts. The first idea is that fraud is definitive across cultures and is universal. The second idea is that fraud cannot ultimately be understood apart from the cultural context in which it occurs, and generalizations must refer to the culture and subjective values of those who define it. This second idea is not a simple case of "ignorance of the law is no excuse," but a result of something ingrained within the social nature of human interaction.

While fraud from a corporate culture perspective has been widely argued (e.g. Levin, 2002; Gebler, 2006), research on the relationship between national culture and fraud is understudied. Most theories and empirical studies on fraud have been developed in a western context. Many scholars are now arguing that many theories and models developed in the western world may not necessarily be transferable to other emerging economies, such as South Korea (Tsui *et al.*, 2004). An alternative approach from large Asian corporations may contribute to further understanding of fraud in a global context, especially for its prevention and detection.

As theory development is a gradual progress, this research could be extended in several directions. The political and legal relationships of chaebols and how this relationship is related to fraud could be further studied in greater detail. The emergence of the Asian economy within the global arena and how this will impact fraud in South Korea is also an interesting area for future research. Since Japan and China have similar cultural backgrounds to South Korea, a closer look at their business structures may also contribute to a better understanding of the nature of fraud for better fraud prevention and detection within Asia.

To better prevent and detect fraud in South Korea it is important to understand the relationship between chaebol organizations and fraud. The analysis presented in this paper is a first step only and more research is needed into this important phenomenon. By understanding the relationship between the fraud triangle and chaebol

organizations regulators, educators, and practitioners will have a valuable tool to educate and train individuals. Furthermore, by understanding how opportunities, pressures, and rationalizations contribute to fraud – chaebol organizations can more easily recognize areas of susceptibility to fraud and strengthen these areas. In the process, the occurrence of fraud will be minimized and the destructive impact that fraud has on society will be lessened.

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EXHIBIT 6

Interlocking Ownership in the Korean *Chaebol*

Dong-Woon Kim

This paper analyses how a dominant entrepreneur of the Korean *chaebol* is able to exercise control, despite having a tiny shareholding, through strategic interlocking ownership. The entrepreneur organises his intimate group, consisting of three clusters of in-house shareholders, and they together have controlling interests in only a few subsidiaries, mainly public companies. These central subsidiaries, as quasi-holding companies, control most other member companies. The resultant ownership structure resembles a grid, in which individual subsidiaries' ownership structures are intermingled.

Keywords: Korean *chaebol*, interlocking ownership, representative owner, intimate group of in-house shareholders, grid ownership structure

Introduction

The backbone of the South Korean economy, family-owned business conglomerates called *chaebols* have undergone an unprecedented transformation since the 1997 financial crisis. The new Kim Dae Jung government, supported by the International Monetary Fund providing an enormous relief fund, has attempted to change deep-rooted attributes of the *chaebol*, particularly autocratic corporate governance, which contributed a great deal to the crisis by, *inter alia*, bringing about aggressive diversification through domestic and foreign loans and resultant excess capacity in the key industrial sectors.

A considerable number of *chaebols* have disintegrated and, in many of the surviving ones, not a few subsidiaries have merged with other member companies, become totally independent or gone into liquidation.[1] However, most major *chaebols* and their dominant entrepreneurs, who are in the heart of autocratic governance, remain unchanged. How whimsically the founding family of Hyundai, the largest *chaebol*, has recently behaved towards the group chairmanship confirms that such governance never faded away.[2]

Over the last decades, entrepreneurs in Korea had successfully devised how to exercise complete and arbitrary control despite having only tiny shareholdings. The entrepreneur organised an intimate group, consisting of his family members, family-owned charities and top managers of subsidiaries, and they together had controlling interests in only a few central subsidiaries, mainly public companies. These subsidiaries acted as holding companies and directly or indirectly controlled most other member companies.

Ambitious entrepreneurs utilised this interlocking ownership for their pursuit of big business. They readily embarked on new businesses by floating companies whose capital was supplied mainly by existing subsidiaries. Perhaps more importantly, they arranged for subsidiaries to guarantee to pay each other's loans to be able to get easy access to large sources of external finance.

The successive Korean governments themselves encouraged all these practices to take place for the rapid growth of the economy, sometimes forcing *chaebols* to take over ailing companies. For their part, *chaebols* preferred to internalise high transaction costs resulting from the lack of a free market system. In this

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way, subsidiaries in a *chaebol* flourished and constituted an integrated network of trust able to meet extremely diverse business interests, which contrasted with loose networks generally regarded as either an intermediate form of, or a competitive alternative to, a more efficient integrated organisation.[3]

This paper aims to reveal a true picture of strategic interlocking ownership that has made, and still makes, the Korean *chaebol* unique in terms of corporate governance and organisational form. The paper utilises, for the first time, primary data, particularly those prepared in accordance with the Fair Trade Act and submitted to the Fair Trade Commission. Given the availability of data, the paper focuses on one major *chaebol* called Doosan, the 14th largest with 21–24 subsidiaries, between 1987 and 1992.[4] Earlier research was mainly interested in types of ownership structure, rather than the inner mechanism of interlocking ownership, without access to primary sources.[5]

The first section analyses the primary data to find out what interlocking ownership was really like in Doosan in 1987 and the later years. Overall ownership was interlocked through two stages within a unique grid structure. The representative owner and his intimate group first controlled a few public companies, and these companies then acted as holding companies, controlling most other member companies. Ownership in individual subsidiaries was also interlocked within a smaller grid structure contained in the overall one. The next section shows, on the basis of secondary data, that such strategic interlocking ownership persisted as the source for autocratic governance in Doosan and other major Korean *chaebols*. The final section concludes the preceding discussions and suggests some policy implications.

Interlocking ownership in the Doosan *chaebol*, 1987–1992

Ownership in Doosan as a whole in 1987 was interlocked through two stages within a grid structure consisting of 22 rows and 17 columns (Table 1). In stage 1, the representative owner (Park Yong-Kon; A) and his intimate group – his family members (B), a family-owned charity (Yonkang Foundation; C), and top managers of subsidiaries (D) – had interests in a small number of subsidiaries, mainly public companies. In stage 2, 12 subsidiaries (S1–10, 14, 17), including all six public companies (S2–4, 6–8), held shares in themselves and the other nine member companies through three dimensions.

In stage 1, the owner (A) alone held shares in six subsidiaries, less than a third of the 21. Importantly, he never was a dominant shareholder in any of the six. Similarly, the charity (C) and managers (D) had minor interests in, respectively, six and four. On the other hand, family members (B) held shares in the six where the owner did, in three of which they had the largest shareholdings (Table 1). The owner group (A+B+C+D) as a whole had interests in a total of eight subsidiaries (S1–4, 6, 7, 10, 14; E1), including five of six public companies (S2–4, 6, 7), a little more than a third of the 21 (Table 1 and Figure 1).

Furthermore, the owner group had controlling interests in only four of the eight – three public (S2–4) and one private (S14) companies (Table 1 and Figure 2).[6] In subsidiary 2, the family's interest (19.1 per cent) was the largest, and the group's (35.8 per cent) exceeded the second largest one of a first financial institution (14.6 per cent). The same was also true of subsidiary 4: the family (21.2 per cent) held a few more shares, but the group (37.5 per cent) much more than those of a second financial institution (19.9 per cent). In subsidiary 14, the family alone secured 53.9 per cent of the capital. On the other hand, the group's interest (30.5 per cent) appears to have been smaller than the second financial institution's (40 per cent) in subsidiary 3. In reality, however, the group had a larger interest (42.5 per cent) because those interests of four subsidiaries (S2, 4 controlled by the group + S1, 9 by S2) had to be counted.

In stage 2, 12 subsidiaries held shares in themselves and the remaining nine member companies through three dimensions (or phases). In dimension 1, all the eight subsidiaries in which the owner group (A+B+C+D) held shares in stage 1 (S2–4, 6, 7 + 1, 10, 14; E1) held shares in a total of 16, comprising the eight themselves and eight other private companies (S5, 9, 11–13, 15–17; E2) (Table 1 and Figure 1). In particular, the three public and one private companies controlled by the group controlled 11 others between them (seven by S2 + two by S3 + one by S4 + one by S14) (Table 1 and Figure 2). Subsidiary 2 was most frequently a dominant shareholder in six (S6 + 1, 5, 9, 11, 15), one of which (S1) was the dominant shareholder in one other (S16). Subsidiary 3 had the largest shareholding in one (S17) of 11 member companies (11 being the largest number of member companies' shares held), and subsidiary 14 controlled one company (S10).

On the other hand, in subsidiary 7 and 12, where outside institutions were the largest shareholders, in-house shareholders, led by, respectively, subsidiary 3 and 4, the second

Table 1: Interlocking ownership in the Doosan chaebol, 1987 (%): (1) Overall structure

	A	B	C	D	S2	S3	S4	S6	S7	S8	S1	S5	S9	S10	S14	S17
S2	8.3	19.1	3.3	5.1			4.4		1.1		0.3				0.8	
S3	6.7	12.9	8.8	2.1	7.5		2.3				0.2		2.0			
S4	7.9	21.2	4.7	3.7										1.4		
S6	0.2	1.8	10.0	0.2	31.0	0.8	3.6		1.0		0.7			1.0	1.5	
S7			10.0			16.4					4.9		10.0	3.8	10.0	
S8													78.0			
S1	1.4	4.0			34.5	34.2	13.1	2.2				10.6				
S5					79.1	0.9	20.0									
S9					90.3	0.4			9.4							
S10			6.7		13.5	10.0	12.0				2.5	6.8			48.5	
S11					60.0											
S12						13.4	37.6									
S13					9.9	12.7						4.7			3.8	
S14	16.8	53.9			13.7	1.0	0.7				13.4					
S15					83.0	10.0	2.0		2.0			1.0	2.0			
S16											76.8			23.2		
S17					100											
S18																100
S19																100
S20										100						
S21										100						

Notes: In the first row appear 16 shareholders; in the first column all 21 subsidiaries. A: the representative owner; B: family members; C: a family-owned charity; D: top managers of subsidiaries; S1–21: subsidiaries (S2–4, 6–8: public companies, the remaining are private companies). % = (a shareholder's shareholding in a subsidiary ÷ the subsidiary's taken-up capital) × 100. Each column shows in which subsidiaries each shareholder held shares; each row by which shareholders shares in each subsidiary were held. For instance, (A) held shares in six subsidiaries (S2, 3, 4, 6 + 1, 14), and shares in S2 were held by eight shareholders (A, B, C, D + S4, 7 + 1, 14). Percentages in black indicate the largest shareholdings. Those in grey mean that they added up to a shareholding larger than the largest one of an outside institution in S3 (42.5% vs. 40%), S7 (55.1 vs. 32.9), and S12 (51 vs. 49); they did not in S13 (31.1 vs. 51.5). Source: Doosan (1987).

largest shareholders, collectively had larger shareholdings (Table 1). In subsidiary 7, subsidiary 3 and three others of E1 (S1, 10, 14), together with the charity (C) and one of E2 (S9), had 45.1 per cent against the 32.9 per cent holding of an institution; in subsidiary 12, subsidiary 4 and one other of E1 (S3) held 51 per cent against the 49 per cent holding of another institution. In subsidiary 13, however, subsidiary 3, the second largest shareholder, and two others of E1 (S2, 14), together with one of E2 (S5), secured only 31.1 per cent of the capital, while a foreign company held 51.5 per cent.

In dimension 2, three private companies of E2 (S5, 9, 17) had interests in a total of nine subsidiaries, including three public companies (S3, 7, 8), which consisted of four of E1 (S3, 7 + 1, 10), two of E2 (S13, 15), and three others (S8 + 18, 19; E3) (Table 1 and Figure 1). Subsidiary 9, controlled by subsidiary 2, had a

controlling interest in one (S8), and subsidiary 17, wholly owned by subsidiary 3, wholly owned two subsidiaries (S18, 19) (Table 1 and Figure 2). In dimension 3, the public company of E3 (S8) wholly owned two private companies (S20, 21; E4) (Table 1, Figures 1 and 2).

To sum up stage 2: 12 subsidiaries (all six public (S2–4, 6–8) and six of 15 private companies (S1, 5, 9, 10, 14, 17), E = eight of E1 in dimension 1 + three of E2 in dimension 2 + one of E3 in dimension 3) had various sizes of interests in a total of 21 companies including the 12 themselves. In detail: E1 + E2 + E3 + E4 = 16 in dimension 1 (eight of E1 and eight of E2) + nine in dimension 2 (four of E1, two of E2, and three of E3) + two in dimension 3 (two of E4) (Figure 1). While each of the 12 held shares in 1–11 subsidiaries, shares in it were held by 1–7 subsidiaries at the same time. For instance, subsidiary 3 held shares in 11 member companies (11 being the largest

Figure 1. Interlocking ownership in the Doosan chaebol, 1987: (2) Stages/dimensions through which ownership was interlocked

Notes: In stage 1: the owner group (A+B+C+D) held shares in eight subsidiaries (including five public companies) (E1). In stage 2: in dimension 1, eight of E1 held shares in eight of E1 and eight others (E2), totalling 16; in dimension 2, three of E2 held shares in four of E1, two of E2, and three others (E3), totalling nine; and in dimension 3, one of E3 held shares in two (E4). In all, 12 subsidiaries (E) had interests in a total of 21 (E1+E2+E3+E4).
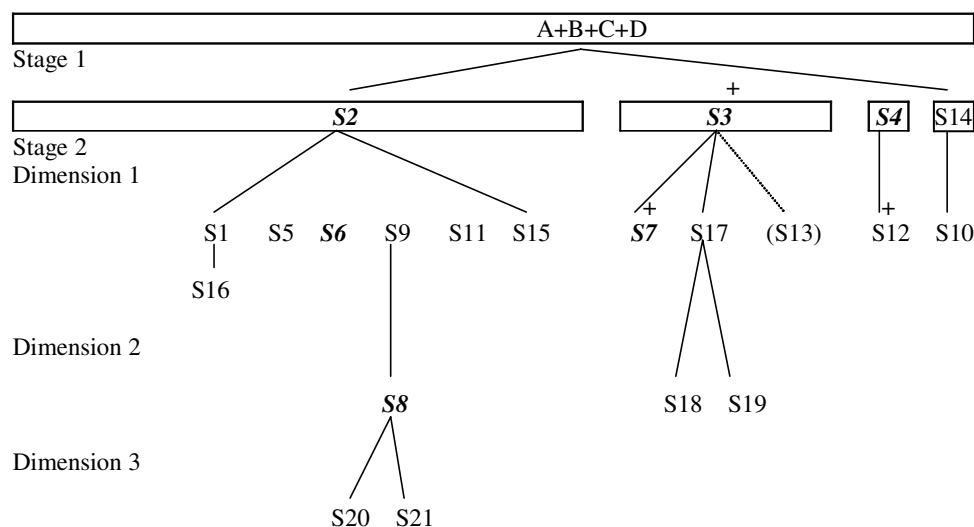
Source: Table 1.

Figure 2. Interlocking ownership in the Doosan chaebol, 1987: (3) A chain of dominant shareholders

Notes: In stage 1: the owner group (A+B+C+D) controlled four subsidiaries. In stage 2: in dimension 1, these four controlled 11 member companies; in dimension 2, two of the 11 controlled three; and in dimension 3, one of the three controlled two. '+' indicates that, in S3, 7 and 12, in-house shareholders, led by the second largest shareholder ((A+B+C+D), S3, and S4, respectively), collectively had a shareholding larger than the largest one of an outside institution; they failed to do so in S13.

Source: Table 1.

number of member companies' shares held), two of which (S1, 9), together with two others (S2, 4), held shares in S3 (Table 1).

In particular, the three public companies controlled by the owner group (S2, 3, 4) acted as holding companies. They most frequently held shares in member companies (10, 11, 9, respectively), and, moreover, directly or indirectly controlled 15 of the remaining 18 member companies (10 by S2 + 4 by S3 + 1 by S4): in dimension 1, they controlled 10 (7 + 2 + 1), two of which (1 + 1 + 0), in dimension 2, controlled three others (1 + 2), one of them (1 + 0) having controlled two others in dimension 3. In addition, a private company controlled by the group (S14) controlled one member company (Table 1 and Figure 2).

In the event, the representative owner (Park Yong-Kon), despite having minor interests in only six of 21 subsidiaries, was able to exercise control over all subsidiaries except one (S13) through interlocking ownership, which he strategically devised in association with a charity and three clusters of in-house shareholders (family members, managers and 12 subsidiaries) and where the three public companies were central shareholders.

Ownership in individual subsidiaries of Doosan in 1987 was also interlocked between the owner and the in-house shareholders, but through 3–6 dimensions (or phases) in a different manner. Resultant structures were smaller grids with 11–13 rows and 15–16

columns, which intermingled to constitute the overall grid with 22 and 17.

Look at an example. Subsidiary 1 was a private company, whose ownership structure was a three-dimensional grid consisting of 11 rows and 15 columns (Table 2; see also Table 1). In dimension 1, shares in subsidiary 1 were initially held by the owner (A), his family members (B) and five subsidiaries (S2–6), including four public companies (S2–4, 6), of which a public company (S2) had the largest shareholding. In dimension 2, shares in these five subsidiaries were held by constituents of the owner group (A, B, a charity (C) and managers (D)) and/or a total of eight subsidiaries (three in dimension 1 (S2–4) and five others (S7 + 9, 10, 14, 1)). The dominant shareholder (S2) was controlled by the group. And in dimension 3, shares in four of these eight subsidiaries (S7 + 9, 10, 14) were held by a total of 12 shareholders – A, B, C, and nine subsidiaries (four in dimension 1 (S2–4 + 5) and five in 2 (S7 + 9, 10, 14, 1)).

In all, four constituents of the owner group and 10 subsidiaries including subsidiary 1 in question (five of six public (S2–4, 6, 7) and five of 15 private companies (S1, 5, 9, 10, 14)), of which a public company controlled by the group (S2) was the dominant shareholder, were involved in interlocking ownership in subsidiary 1. The group had interests in eight of the 10 subsidiaries (S2–4, 6, 7 + 1, 10, 14) on the one hand; on the other hand, each of the

Table 2: Interlocking ownership in subsidiary 1 of the Doosan chaebol, 1987 (%): overall structure and dimensions through which ownership was interlocked

	A	B	C	D	S2	S3	S4	S6	S5	S7	S9	S10	S14	S1
Dimension 1														
S1	1.4	4.0			**34.5**	34.2	13.1	2.2	10.6					
Dimension 2														
S2	8.3	**19.1**	3.3	5.1			4.4			1.1			0.8	0.3
S3	6.7	12.9	8.8	2.1	7.5		2.3				2.0			0.2
S4	7.9	**21.2**	4.7	3.7								1.4		
S6	0.2	1.8	10.0	0.2	**31.0**	0.8	3.6			1.0		1.0	1.5	0.7
S5					**79.1**	0.9	20.0							
Dimension 3														
S7			10.0			16.4					10.0	3.8	10.0	4.9
S9					**90.3**	0.4			9.4					
S10			6.7		13.5	10.0	12.0		6.8				**48.5**	2.5
S14	16.8	**53.9**			13.7	1.0	0.7							13.4

Notes: In the first row appear 14 shareholders (compared with 16 in Table 1); in the first column 10 subsidiaries (21). See notes in Table 1.
Source: Table 1.

10 held shares in 1–7 member companies, while shares in it were held by 1–7 member companies at the same time. For example, subsidiary 1, in which five member companies (S2–4, 6 + 5), together with A and B, had interests, itself did in turn hold shares in three of them (S2, 3, 6) and also in three others (S7 + 10, 14).

In six other subsidiaries (including four public companies), ownership was also interlocked through three dimensions as in subsidiary 1, although mechanisms of financial co-operation between the in-house shareholders were different from each other. In nine subsidiaries (including one public company), ownership was interlocked through four dimensions; in three (one), through five; and in two, through six. A feature is that ownership was interlocked through comparatively fewer dimensions in six public companies, all of which were shareholders, than in 15 private companies, only six of which were shareholders. As the result, ownership structures in the public companies (five grids with 11 rows × 15 columns and one with 12 × 15) tended to be comparatively smaller than those in the private companies (five with 11 × 15, six with 12 × 15, and four with 13 × 16).

The characteristics of overall interlocking ownership observed in the Doosan *chaebol* in 1987 remained, on the whole, nearly unchanged for the next five years (Table 3). First, the grid structure of 1987, consisting of 22 rows (R) and 17 columns (C), was similar in size to five others (22–25 × 16–17). In the first column appeared all 21–24 subsidiaries (1st C; 21 in 1987 and 21–24 in 1988–1992); in the first row 11–12 subsidiaries as shareholders (1st R; 12 (57 per cent) in 1987 and 11–12 (46–57 per cent) in 1988–1992), including all six (S2–4, 6–8; in 1987–1988) or eight (S1–8; 1989–1992) public companies, together with four constituents of the owner group. Public companies explained around a third of all subsidiaries (29 per cent in 1987, 27 per cent in 1988 and 33–38 per cent in 1989–1992), but their capital more than half subsidiaries' total capital (48 per cent in 1987 and 51–59 per cent in 1988–1992).

Second, ownership was interlocked through two stages with three (in 1987) or two (1988–1992) dimensions in stage 2 (S/D). Third, in stage 1, the owner group had interests in a total of eight subsidiaries in 1987 (S(a1); 38 per cent of 21) and, subsequently, a little more extensively in 10–11 (46–52 per cent of 21–24), including all (in 1988–1991) or most (1987, 1992) public companies. The representative owner (Park Yong-Kon) alone held shares in only six (S(a1'); 29 per cent of 21 in 1987 and 26–29 per cent of 21–23 in 1988–1990) or five (21–22 per cent of 23–24 in 1991–1992), most of which were public companies, with no controlling interests (S(a2')). And fourth, in stage 2, 11–12 subsidiaries were shareholders in themselves and the remaining 9–13 member companies through two or three dimensions. While each of the 11–12 held shares in 1–14 subsidiaries, shares in it were held by 1–7 subsidiaries at the same time. In particular, three public companies (S2–4) most frequently had interests in 9–14 subsidiaries each (38–62 per cent of 21–24) and controlled most other member companies.

Table 3: Interlocking ownership in the Doosan chaebol, 1987–1992: overall structure (X) and the owner group's dominance in ownership and control (Y)

| | X | | | | | Y | | | | |
| | Grid | | 1st C | 1st R | S/D | Stage 1 | | Stage 2 | | |
Year	R	C				S(a1)/S(a1')	S(a2)/S(a2')	S(b)	S(c1)	S(c2)
1987	22	17	21(6)	12(6)	2/3	8(5)/6(4)	4(3)/0	4(3)	16	15
1988	23	17	22(6)	12(6)	2/2	10(6)/6(4)	3(2)/0	3(2)	11	10
1989	22	17	21(8)	12(8)	2/2	11(8)/6(5)	3(2)/0	3(2)	9	8
1990	24	17	23(8)	12(8)	2/2	11(8)/6(5)	1(0)/0	1(0)	2	0
1991	24	17	23(8)	12(8)	2/2	11(8)/5(4)	1(0)/0	1(0)	2	0
1992	25	16	24(8)	11(8)	2/2	11(7)/5(4)	5(3)/0	3(3)	18	18

Notes: X: rows (R) and columns (C); subsidiaries (including public companies) appearing in the first column (1st C) and row (1st R); stages (S)/dimensions in stage 2 (D) through which ownership was interlocked. Y: in stage 1 – subsidiaries in which the owner group/the representative owner had interests (S(a1)/S(a1')) or controlling interests (S(a2)/S(a2')); in stage 2 – those, of S(a2), controlling other member companies (S(b)), and those controlled by all of S(b) (S(c1)) or public companies of S(b) (S(c2)).
Sources: Doosan (1987–1992).

However, the owner group's dominance in ownership and control did not remain secure, although it appears that the group – thereby the representative owner – was eventually able to exercise control over most subsidiaries through the agency of three public companies (S2–4) (Table 3). In 1987, the group controlled four subsidiaries (S(a2); 19 per cent of 21), including the three public companies, in stage 1; and, these four (S(b)) directly or indirectly controlled 16 member companies (S(c1); 76 per cent), including 15 by the public companies (S(c2)), in stage 2 (see also Figure 2).

For the next two years, the owner group less frequently had the largest shareholdings in three subsidiaries (S(a2); 14 per cent of 21–22), including two of the three public companies (S2, 4), in stage 1, while a financial institution had 46.9–55 per cent of the capital in the other public company (S3). Moreover, the three subsidiaries (S(b)) controlled smaller numbers of member companies in stage 2: 11 (S(c1); 50 per cent of 22; including 10 by the two public companies (S(c2)) in 1988, and 9 (43 per cent of 21; 8) in 1989. "Non"-subsidiary 3 controlled 5 (in 1988) or 6 companies (1989).

In 1990–1991, the group was a dominant shareholder in only one private company (S(a2); 4 per cent of 23), which (S(b)) was a dominant shareholder in two member companies (S(c1); 9 per cent). On the other hand, the financial institution now controlled all the three public companies, which held shares in a total of 15 (in 1990) or 16 subsidiaries (1991). In 1992, however, the group regained its dominance comparable to that of 1987. It more frequently had controlling interests in five subsidiaries (S(a2); 21 per cent of 24), including the three public companies, and these public companies (S(b)) then controlled a larger number of member companies, 18 (S(c1) and S(c2); 75 per cent).

Why such a fluctuation in the owner group's ownership and control took place has yet to be revealed. It seems likely, however, that the financial institution had long maintained an intimate relationship with the representative owner and his family, and that the group's ownership was temporarily transferred to the institution, as a proxy, for certain, presumably legal, reasons. Park Yong-Kon remained the registered owner of the Doosan *chaebol* in 1987–1992 and thereafter.

Interlocking ownership in major Korean *chaebols*, 1989–2000

Lack of access to primary sources does not make it possible to find out how ownership was interlocked in Doosan and other Korean *chaebols* after 1992. However, it emerges from secondary data that dominant entrepreneurs have probably been exercising control over their *chaebols* by means of interlocking ownership despite having only tiny personal shareholdings. The interlocking ownerships were devised together with in-house shareholders and a few public companies usually played a key part.

Ownership in major *chaebols* in 1989, according to data compiled by Korea Investors Service Inc., a consulting company, was interlocked within such a grid structure as exemplified in Doosan in 1987 (Table 4; see also Tables 1 and 3).[7] The size of a grid depended on how many subsidiaries a *chaebol* had and how many of them were shareholders. Doosan (14th) had 21 subsidiaries (1st C), 12 of which (1st R) held shares, so its grid consisted of 22 rows (R; 21 + one) and 17 columns (C; 12 + four constituents of the owner group + one). The grid in Samsung (3rd) with 49 rows and 24 columns was the biggest, whereas that in Hanyang (19th) with 5 rows and 6 columns the smallest. A feature is that public companies explained only around, or much less than, a third of all subsidiaries (1st C; e.g. Doosan (14th), 8 public companies out of 21 subsidiaries (38 per cent); Sunkyung (7th), 3 public companies out of 22 subsidiaries (14 per cent)).

The number of subsidiaries as shareholders (1st R) ranged widely between 19 (Hyundai (1st), Samsung (3rd), and Lotte (10th)) and one (Hanyang (19th)). But, it was in only eight *chaebols*, less than a third of the 25 under consideration, that more than half all subsidiaries held shares: Doosan (14th; 12 (1st R) of 21 (1st C)); Hyundai (1st; 19 of 37), Hanjin (6th; 11 of 17), Lotte (10th; 19 of 28), Dongkuk Steel (17th; 10 of 13), Dongbu (23rd; 8 of 13), Halla (29th; 4 of 6), and Woosung Construction (30th; 4 of 7). Importantly, in most of the 25 *chaebols*, the majority of subsidiaries as shareholders were public companies (1st R; e.g. Doosan (14th), 8 of 12; Kumho (22nd), 3 of 4); from a different angle, all (Doosan, 8 (1st R) of 8 (1st C)) or most (Kumho, 3 of 4) public companies held shares in member companies.

The owner group usually controlled only some of these public companies, which in turn controlled most other member companies with the result that the group was eventually able to get control over all or most subsidiaries. Doosan (14th) and Daewoo (2nd) are examples. In the former with 21 subsidiaries, the group had controlling interests in two, of eight (1st R), public and one private companies in stage 1 (S(a2)), and these three (S(b)) controlled a total of nine member companies (S(c1)), including eight controlled by the two

Table 4: Interlocking ownership in 30 largest Korean chaebols, 1989 (number): overall structure (X) and the owner group's dominance in ownership and control (Y)

| | X | | | | Y | | | |
| | Grid | | 1st C | 1st R | Stage 1 | Stage 2 | | |
Chaebol	R	C			S(a2)	S(b)	S(c1)	S(c2)
14. Doosan	22	17	21(8)	12(8)	3(2)	3(2)	9	8
1. Hyundai	38	24	37(14)	19(12)	14(6)	3(1)	24	4
2. Daewoo	28	17	27(9)	12(7)	4(3)	3(3)	25	25
3. Samsung	49	24	48(13)	19(12)	9(8)	7(6)	40	33
5. Ssangyong	22	13	21(11)	8(7)	2(2)	1(1)	19	19
6. Hanjin	18	16	17(6)	11(6)	10(6)	4(3)	10	8
7. Sunkyung	23	12	22(3)	7(3)	8(2)	2(2)	14	14
8. Hanwha	25	15	24(8)	10(7)	5(4)	2(2)	22	22
9. Daelim	14	8	13(5)	3(2)	1(1)	1(1)	12	12
10. Lotte	29	24	28(4)	19(3)	12(2)	7(2)	19	5
11. Donga	17	9	16(3)	4(2)	10(3)	3(2)	10	9
12. Hanil	14	10	13(3)	5(3)	3(2)	1(1)	10	10
13. Kia	11	9	10(4)	4(4)	–	–	–	–
16. Hoysung	14	8	13(2)	3(2)	2(2)	2(2)	11	11
17. Dongkuk Steel	14	15	13(6)	10(6)	3(2)	2(1)	11	5
18. Sammi	14	8	13(2)	3(2)	3(2)	2(2)	11	11
19. Hanyang	5	6	4(1)	1(1)	3(1)	1(1)	1	1
20. Kukdong Construction	9	7	8(2)	2(2)	2(1)	1(1)	6	6
21. Kolon	19	9	18(5)	4(4)	2(1)	1(1)	16	16
22. Kumho	12	9	11(4)	4(3)	2(1)	1(1)	9	9
23. Dongbu	14	13	13(5)	8(5)	4(2)	3(2)	10	9
24. Kohab	6	7	5(2)	2(1)	1(1)	1(1)	4	4
27. Miwon	18	13	17(5)	8(4)	8(4)	6(3)	10	6
29. Halla	7	9	6(2)	4(2)	3(1)	1(0)	3	0
30. Woosung Construction	8	9	7(2)	4(2)	2(1)	1(1)	5	5

Notes: Information on five *chaebols* (LG (4th), Bumyang (15th), Hanbo (25th), Haitai (26th) and Samwhan (28th)) is not sufficient or available. Samsung (3rd) is as of 1991. X: rows (R) and columns (C); subsidiaries (including public companies) appearing in the first column (1st C) and row (1st R). Y: in stage 1 – subsidiaries in which the owner group had controlling interests (S(a2)); in stage 2 – those, of S(a2), controlling other member companies (S(b)), and those controlled by all of S(b) (S(c1)) or public companies of S(b) (S(c2)). Where there were two or more dominant shareholders with equal shareholdings in a subsidiary, it was assumed that each of them controlled the subsidiary. Thus, in Daewoo (2nd), for instance, the number of subsidiaries controlled by the owner group (S(a2); four) and member companies (S(c1); 25) is larger than that of all subsidiaries (1st C; 27).
Sources: Table 3; Korea Investor Service Inc. (1990, Chapter 3); Kim (1993, pp. 117, 191–192).

public companies (S(c2)), in stage 2. In addition, a financial institution, presumably as the group's proxy, controlled one public company, which did control six subsidiaries. In the latter *chaebol* with 27 subsidiaries, the group had the largest shareholdings in three, of seven, public and one private companies, and these public companies directly or indirectly controlled 25 subsidiaries.

There were two types of variations. In some *chaebols*, public companies controlled by the owner group controlled member companies in stage 2 less frequently than private companies

did: Hyundai (1st; 4 (S(c2)) of 24 (S(c1)), Lotte (10th; 5 of 19), and Dongkuk Steel (17th; 5 of 11). In some others, the owner group itself was a dominant shareholder in stage 1 as frequently as subsidiaries controlled by the group were in stage 2: Hanjin (6th; 10 (S(a2)) vs. 10 (S(c1)), Donga (11th; 10 vs. 10), Miwon (27th; 8 vs. 10), and Halla (29th; 3 vs. 3).[8]

As far as the period after 1989 is concerned, detailed information of any kind on a large number of *chaebols* is not available, but collective shareholdings published by the Fair Trade Commission hint at the existence of strategic

interlocking ownership in major *chaebols* (Table 5). Either the representative owner's (A; 1.5–4.9 per cent) or his intimate group's shareholdings (B+C+D; 4.5–6.2 per cent) explained only tiny proportions of each *chaebol*'s total capital. Even their joint ones (A+B+C+D; 6–14.7 per cent) still did not cover a large percentage of share capital.

On the other hand, subsidiaries' collective shareholdings (E; 32.5–38.9 per cent) were around, or more than, a third of total capital, and they enabled all in-house shareholders' (A+B+C+D+E; 43–47.2 per cent) to account for nearly half the capital. (E) and (A+B+C+D+E) remained large despite that (A), (B+C+D) and (A+B+C+D) tended to decrease over time. This appears to indicate, to some extent, that interlocking ownership, which was led by a group of subsidiaries, presumably public companies in particular, persisted as the source for autocratic governance.

Summary

This paper has investigated, using case material on the Doosan *chaebol* between 1987 and 1992, how a dominant Korean entrepreneur was able to exercise absolute control despite having only a tiny shareholding by means of interlocking ownership.

Ownership was interlocked through two stages within a grid structure, intermingled parts of which represented individual subsidiaries' ownership structures. In stage 1, the entrepreneur alone had minor interests in only five or six of 21–24 subsidiaries. He and his intimate group of in-house shareholders held shares in 8–11 subsidiaries, including all or most of six or eight public companies, but they had controlling interests in only some of them, mainly public companies. In stage 2, 11–12 subsidiaries had interests in themselves and the other member companies through two or three dimensions. While each of the 11–12 held shares in 1–14 subsidiaries, shares in it were held by 1–7 subsidiaries at the same time. In particular, three public companies controlled by the owner group, or its proxy, acted as holding companies: they most frequently had interests in 9–14 subsidiaries each and, significantly, directly or indirectly controlled most other member companies. Secondary sources show that strategic interlocking ownership with a few public companies as central shareholders continued to enable dominant entrepreneurs to get control over Doosan and other major *chaebols* until recently.

The findings of the present paper suggest that the fundamental and essential solution to the Korean *chaebol*'s autocratic corporate governance is to refrain or discourage dominant entrepreneurs from organising their intimate groups and devising personal interlocking ownership. Measures need to be taken to prevent undue financial relationships from occurring or developing between in-house shareholders: first, the entrepreneur and three constituents of his intimate group – family members, family-owned charities and top managers; second, constituents of this owner group and subsidiaries, public companies in particular; and third, subsidiaries themselves.

The Kim government made an attempt to limit shareholdings of subsidiaries in other member companies, having generally neglected the first two sorts of financial relationships. Also, it introduced, or is considering, schemes for, among others, inducing outside directors to play a key part in corpo-

Table 5: Collective shareholdings in 30 largest Korean chaebols, 1987–2000 (%)

Shareholding of	1987	1989	1991	1993	1995	1997	2000
The representative owner (A)				4.1	4.9	3.7	1.5
The intimate group (B+C+D)				6.2	5.6	4.8	4.5
The owner group (A+B+C+D)	15.8	14.7	13.9	10.3	10.5	8.5	6.0
Subsidiaries (E)	40.4	32.5	33.0	33.1	32.8	34.5	38.9
All in-house shareholders (A+B+C+D+E)	56.2	47.2	46.9	43.4	43.3	43.0	44.9

Notes: For instance, (A+B+C+D+E) of 1989, 47.2%, is the average of 30 shareholdings, each of which is [(all in-house shareholders' total shareholding in subsidiaries ÷ all subsidiaries' taken-up capital) × 100] in a *chaebol*. In 1989, for which information on 27 *chaebols* is available, 14 shareholdings (47.8–75%) were above the average, and even 11 of the remaining 13 (33.8–46.1) were large enough; the smallest shareholding was 19.8%.
Sources: Fair Trade Commission (1992–2001); Soh (1996, pp. 40, 46).

rate governance, encouraging real holding companies to be formed, and permitting minor shareholders to prosecute the board for mismanagement. All these have taken effect only to a limited degree or have yet to take shape. It will take time to change the long-standing autocratic governance. The government should consistently and persistently focus its efforts on how to get rid of the present interlocking ownership of a chain of intimate and improper relationships between the entrepreneur and four clusters of in-house shareholders.

Acknowledgements

Notes

1. The number of subsidiaries belonging to 30 largest *chaebols* was 490 (270 for 10 largest ones) in 1987 and increased to 821 (402) in 1997; it had since decreased to 624 (310) by 2001. The average number of subsidiaries per *chaebol* was 16 (27), 27 (40), and 21 (31) in the respective years. The Samsung *chaebol* had 80 subsidiaries, the largest ever number, in 1997.
2. Chung Ju-Yung, the founder, representative owner and honorary group chairman, abruptly forced Mong-Ku, his second oldest son and a group chairman from 1996, to step down in March 2000. Two months later, he declared, also abruptly, that he, Mong-Ku, and Mong-Hun, his fifth oldest son and another group chairman from 1998, would resign their key positions. However, Mong-Hun had regained the group chairmanship and inherited the status of the owner by the time the founder died at the age of 86 in March 2001; and Mong-Ku became the owner and group chairman of a new, major *chaebol*, Hyundai Motors, which consisted of several former subsidiaries of Hyundai, six months later.
3. For the *chaebol* and its corporate governance in general, see Amsden (1997), Biggart (1997), Chang *et al.* (1998), Chang and Choi (1988), Chung and Lee (1989), Jones (1994), Kim (1991), Kim (1987), Lee (1994), Lee and Yoo (1987), Park (1999), Steers (1998), Steers *et al.* (1989), Yoo and Lee (1987) and Zeile (1991).
4. The Commission has regulated larger *chaebols* – all with assets of more than 400 million wons between 1987 and 1992, and, thereafter, 30 largest ones – and required them to compulsorily submit data on ownership and other key aspects since 1987. It has regularly published only some of these data in "press release" form and, recently, onto the Web (www.ftc.go.kr). Copies of the original Doosan data were available at the *chaebol*'s headquarters in 1996 when the author of the present paper was invited to write a history of this oldest – 100-year-old – Korean business. Korean *chaebols* generally tend not to permit scholars to have access to any primary data.
5. Among others, Hattori (1984, 1989); Kang *et al.* (1991, pp. 42–48); Kong (1995); Korea Economic Research Institute (1995, pp. 177–196).
6. A "controlling interest" here is a provisional one. Above all, information on only total shares held by shareholders is available, while that on ordinary or preference shares is not. Furthermore, there is no international consensus on the minimum stake deemed necessary for control or owner-control to exist. Korea's Fair Trade Act has taken owner-control to exist where the owner group and subsidiaries controlled by the group collectively had 30 per cent or more of a *chaebol*'s total (until 1996) or ordinary (from 1997) capital.
7. These data are the most detailed ones on a large number of *chaebols* available at present, and have been often used by scholars. But, they are flawed in three respects. Shareholdings of the owner group are known, but those of its four constituents are not. Shareholdings of individual subsidiaries are frequently missing. And, no information on outside shareholders is contained in the data.
8. In these four and two other *chaebols* (Kia (13th) and Hanbo (25th)), the owner group's interests (20.6–73 per cent) were larger than subsidiaries' (0.2–30); the difference between the two was the largest in Hanbo (73 vs. 0.2) (Soh, 1996, pp. 40, 46).

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"My feeling is that you don't have to worry about the share price. Providing you are running the business well, you are increasing profitability and meeting market expectations, the share price will look after itself. If you are doing your job properly, you will get the share price you want." *John Hale, Finance Director, Mean Fiddler Music Group.*

EXHIBIT 7

The Politics of *Chaebol* Reform in Korea: Social Cleavage and New Financial Rules

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ABSTRACT   *Korea's developmental state had long maintained the principle of "separation be-tween industrial capital and financial capital," whereby the nation's industrial conglomerates – the chaebol – were restricted from having controlling ownership of financial institutions, espe-cially banks. The financial crisis of 1997-98 renewed calls for regulating the chaebol, especially in terms of reinforcing corporate governance and competition policy. This process was supported and promoted by vibrant non-governmental organisations led by progressive activists who forged an effective alliance with the government and the ruling party whose platform followed a populist course. The reform movement has been resisted with equal fervour by conservative elements, led by the opposition party, chaebol-supported think tanks, and the conservative media. This cleavage is evident in the case of a pending legislation on chaebol ownership of financial institutions, the Financial Industry Structure Law. The controversy over this proposed law demonstrates that the contemporary chaebol reforms are deeply politicised. It also illustrates the path-dependent nature of the government-chaebol relationship.*

KEY WORDS: *Chaebol*, corporate governance, Financial Industry Structure Law, developmental state, Samsung Group

One of the crucial factors in the functioning of Korea's developmental state was the government's near-total control of financial resources and credit (Jones and Sakong, 1980; Masons et al., 1980). Modern banks in Korea were created during Japanese colonial rule and were mostly Japanese-owned. When Korea regained its independence, the newly formed government took control of these banks and sold them to wealthy businesses, but they were nationalised again after the military *coup* of 1961. The ensuing industrialisation drive was financed by a state-allocated credit system that utilised both foreign debt and financial resources at home (Cole and Park, 1983; Zysman, 1983). Dozens of *chaebol* were formed during the rapid growth period through highly preferential treatment extended by the government to industry champions (Woo, 1991).

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Chaebol are Korea's vertically integrated industrial conglomerate controlled by a founding family. While the *chaebol* have hired an increasing number of professional managers in recent years, family members continue to dominate the top executive positions (Kim, 1991: 266-7). As an organisation, the *chaebol* mirror their Japanese counterparts, which rely on a complex web of cross-company ownership to maintain tight managerial control of their group companies (Chang, 2003). In one crucial aspect, however, the *chaebol* and *keiretsu* can be distinguished: ready access to credit through direct bank ownership, which played a central role in the *keiretsu* business strategy and expansion, but not in the case of the *chaebol*. This was not by any design on the part of the *chaebol*; they were simply forbidden from engaging in banking business by the government. In fact, throughout most of Korea's modern economic development, the wide-ranging restrictions on *chaebol* bank ownership helped ensure that *chaebol* followed the dictates of the government.

The restriction on bank ownership provided "a separation between financial capital and industrial capital," a phrase that represented an important policy principle to prevent dominance by large non-financial industries ("industrial capital") over the nation's financial industry. With private ownership of banks effectively banned, the government had near-complete control of the financial industry and its resources, which in turn served as an effective means to secure *chaebol* compliance with the government's policy goals. In fact, in their early years, the *chaebol* had little choice but to follow the government's industrial policy faithfully in order to finance their expanding business through domestic financial institutions, which the Finance Ministry regulated directly through compartmentalised markets with limited entry at the expense of competition (Park and Patrick, 1994). Both foreign and domestic businesses were banned from the financial sector, which stymied competition and has contributed to the weakness of Korea's financial industry. Ironically, this weakness meant that the post-financial crisis restructuring required a temporary nationalisation of bankrupted banks (Lee, 2002).

Certainly, many countries discourage non-financial businesses from acquiring a controlling position in banks in order to prevent conflicts of interest. For example, commercial companies may weaken banks if they seek to enhance their liquidity through irregular lending practices by related banks. The *chaebol* ownership of banks has been regarded as particularly risky in view of their overly aggressive business strategies and the practice of expanding cross-shareholding equity positions among intra-group companies (IMF, 2006; 37-8). The ban on direct bank ownership was thus maintained as a principle from the early 1960s to the early 1980s, when the Korean government began to allow limited ownership by setting a ceiling. Such was not the case, however, for non-bank financial businesses, especially following a series of financial liberalisations that began in the 1980s. The relaxed regulations on *chaebol* ownership of non-bank financial companies have been seen as the main culprit in the ability of *chaebol* to expand the so-called "circular pattern" of cross-shareholding.

This article examines the history of the Korean government's attempt to regulate *chaebol*'s ownership structure as a way of curbing economic concentration and the response of *chaebol* in adapting to the regulatory environment. It presents a case study of the attempt to revise the Finance Industry Structure Law (FISL) and

analyses the coalition pattern among major policy actors surrounding *chaebol* policies.

Evolution of *Chaebol* Corporate Ownership

By the mid-1980s, the *chaebol*, with 20 to 40 companies in each group, had become domestic powerhouses that had transformed into fully-fledged multinational corporations with billions of dollars in annual revenue (Kim, 2000). The pace of their growth was such that by the mid-1980s, the top 50 *chaebol* accounted for almost a fifth of Korea's gross domestic product and some 45% of mining and manufacturing sales. This was achieved by aggressive diversification and expansion into new industries, while forming oligopolist positions in major industries. The average number of manufacturing businesses held by the top ten *chaebol* in 1983 was 8.6 and that of the top 20 *chaebol* was 6.6 (Zeile, 1991: 306).

From the mid-1980s, the Korean government began to take more seriously the myriad of problems deriving from the organisational expansion of *chaebol*. From the perspective of the well-being of the national economy, the ever-increasing gap between *chaebol* and smaller businesses heightened the problem of economic injustice. Furthermore, the common *chaebol* practice of propping up unprofitable businesses through the support of other, profitable firms caused serious problems in resource allocation, while redundant investments in manufacturing businesses led to considerable overcapacity in some industries. To address these problems, the government had to switch its policy on *chaebol* from the traditional practice of extending subsidies and favours to one that invoked sanctions and regulations.

The *chaebol*'s ownership structure was called into question first. In 1986, the revised Fair Trade Act banned additional cross-shareholding of intra-group companies for *chaebol* whose assets amounted to more than two billion Korean won. Under this "cross-shareholding restriction rule" [*sangho chulja jehan je*], between 30 and 40 top *chaebol* have been subjected to monitoring by the Fair Trade Commission (FTC). In the same year, the government introduced a new regulation called "equity investment sum caption rule" [*chulja chongak je*], restricting the total sum of intra-corporate investment by *chaebol* companies. The top *chaebol* (initially defined as companies with assets in excess of 400 billion won, and later assets in excess of six trillion won) were not allowed to invest more than 40% of their net assets in group subsidiaries, and this ceiling was further reduced to 25% during the fourth revision of the Fair Trade Act (FTA) in 1994. In 1998, however, this regulation was abolished temporarily in order to accelerate corporate restructuring after the financial crisis. A year later, the restriction was reintroduced but it exempted those *chaebol* that demonstrated "good" corporate governance. Its most recent revision, made in April 2007, relaxed the equity sum caption rule by moving up the scale of *chaebol*'s assets to ten trillion won and the ceiling of its intra-group investment to 40% of its net assets (*Hankuk Kyungje* [Seoul], 3 April 2007).

Despite these restrictions, the extent of *chaebol* cross-shareholding remained high. Thirty-eight *chaebol* were subject to the cross-shareholding restriction rule in both 2005 and 2006. The average level of cross-shareholding is about 51% of their member companies' total shares. The total shareholdings of the owner and his or her family are less than 5% but cross-shareholdings of member companies stood at

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around 44%. Nine *chaebol* were designated as large enterprise groups whose total equity investment was limited in both years. Their total cross-shareholding was 47% in 2005 and 48% in 2006. Again, owner family's total shares were only 4.6%, but about 41% of inter-corporate investment among group companies maintains *chaebol*'s group solidarity (Table 1).

The financial crisis radically altered the government-*chaebol* relationship. The generally positive public image of *chaebol* as national champions and exclusive family businesses became a negative one, as they were discredited by the events of the crisis, being seen as irresponsible and anti-social, and thus undeserving of protection. According to analysts, such as Kang (2000) and Haggard (2000), prior to the crisis, the deregulation of financial and capital markets created a "moral hazard," permitting excessive lending for the expansion of the *chaebol*. An inflow of large amounts of speculative capital and a sharp deterioration in the terms of trade by the late 1990s left the Korean economy vulnerable to external shocks, eventually falling victim to the Asian financial crisis of 1997. Much of the blame for the crisis was sheeted home to mismanagement by incompetent members of *chaebol*-founding families, with particularly severe criticism directed at the ownership structure of *chaebol*.

Responding to the crisis, strong monitoring activities and new competition policies were introduced under the new Kim Dae-jung government. The *chaebol* were now portrayed as barriers to the development of a fair and competitive market system. Foreign direct investment was courted actively and foreign businesses were even seen as a force to counteract the dominance of *chaebol* (Lee and Han, 2006). Newly empowered non-governmental organisations (NGOs) forged a close relationship with the government in advocating reform of *chaebol* corporate governance. *Chaebol* that survived the harsh corporate restructuring following the Asian crisis improved their financial conditions by restraining diversification ambitions and their corporate governance became more transparent due to monitoring mechanisms (Choe and Pattnaik, 2007). Nevertheless, the dominance of founding family management still remains unchanged so that *chaebol*'s corporate governance is subject to the scrutiny of NGOs.

The populist desire to discipline the *chaebol* was fuelled further under the succeeding President, Roh Moo-hyun, who was elected on the basis of his image as an outsider politician and an anti-establishment voice. The Roh government intensified *chaebol* reforms, investigating their illegal political funding and accounting irregularities, while pressuring them to improve their corporate governance. The calls for *chaebol* reforms became louder after the newly established ruling Woori party won a majority in the National Assembly after the General Election in April 2004. The revision of the FISL, in particular, showcased the effectiveness of the coalition between the regulatory government and progressive politicians and NGOs.

Adapting to Government Ownership Regulations

Although the Korean government has sought to limit collusion between financial capital and industrial capital, *chaebol* financial institutions quickly diversified to include insurance, securitie, and investment and trust banking. In the early 1980s, the

Table 1. Korean *chaebol* ownership structure

		Owner family total			Other than owner family			Total cross-shareholdings
	Year	Chairman	Relatives	Sub-total	Group firms	Other	Sub-total	
Chaebol subject to cross-shareholding restrictions	2005	2.01	2.92	4.94	43.98	2.30	46.28	51.21
	2006	2.00	2.89	4.89	44.08	2.31	46.39	51.27
Chaebol subject to total investment limit	2005	1.83	2.82	4.64	40.69	1.80	42.49	47.14
	2006	1.72	2.92	4.64	41.54	2.02	43.56	48.20

Source: Fair Trade Commission (2005; 2006).

government began to divest its holdings in commercial banks but had set an 8% ceiling on ownership for any single individual or business group. This restriction, however, did not extend to the life insurance business, allowing several *chaebol* to assume control of large insurance companies. At a later date, the limit on bank ownership was reduced further to 4%. When the Banking Law was revised in April 2002 to raise the limit to 10%, restrictions on the *chaebol* remained. Specifically, while any individual – foreign or Korean national – may purchase up to 10% of a bank's shares, in the case of a *chaebol*, their voting rights are limited to 4%.

Since the tightening of regulations of cross-shareholdings in the late 1980s, a number of *chaebol* tried to circumvent these restrictions by developing an even more complex "circular" system of cross-shareholding among intra-group companies. In this new system, their newly acquired financial institutions came to play a key linkage role. Among the 38 *chaebol* subject to cross-shareholding restriction in April 2005, 23 of them own financial institutions as part of their group. Of these, 13 have significantly incorporated financial institutions into their group. Table 2 shows that the 29 financial or insurance companies that belong to these 13 *chaebol* have invested 2430 billion won (about a 70 billion won increase over 2004) in their intra-group companies. Each *chaebol*-owned financial or insurance company holds an average of 12.58% (a 2.64% increase from the 2004 average) of shares in 78 intra-group companies. Samsung Group owns five financial institutions but the size of their capital investment is substantial, accounting for half of the total held by all 13 *chaebol* financial institutions. Those five institutions have investments in 27 intra-group companies, suggesting that the Samsung Group is actively combining finance capital with its industrial capital, relative to other *chaebol* groups. Due to this corporate governance structure, Samsung Group has been the target of tight government monitoring and intense protests by progressive NGOs.

The *chaebol*-owned financial institutions have also been investing in their major industrial groups. As seen in Table 3, Samsung Card holds about a quarter of Samsung Everland, which belongs to the Samsung Group. Samsung Life Insurance

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Table 2. Intra-group investment by *chaebol*-owned financial·insurance companies, 1 April 2005

Chaebol	No. of intra-group financial institutions (IGFIs)	No. of intra-groups companies	Volume of capital investment by IGFI (billion won)	Average % share of IGFIs in intra-group companies of each *chaebol*
Samsung	5	27	1275.6	16.40
Dongyang	6	12	614.3	42.74
Dongbu	4	9	144.9	9.32
Hyundai Auto.	1	4	122.7	4.67
Hanhwa	2	6	112.2	2.76
CJ	1	1	62.5	91.80
Hyundai Heavy Industry	1	2	32.5	65.03
SK	3	5	29.5	2.62
Lotte	2	2	17.4	4.54
Taekwang	1	4	9.2	16.12
Hyundai	1	3	5.8	6.15
Geumho	1	1	2.4	6.24
Kolon	1	2	0.7	2.50
Total	29	78	2430.7	12.58

Source: Fair Trade Commission (2005).

Table 3. Intra-group investments by *chaebol* financial institutions

Chaebol	Major *chaebol* companies owned by intra-group financial institutions
Samsung	Everland (Samsung Card 25.64%) Samsung Electronics (Samsung Life 7.23%, Samsung Fire and Marine Co. 1.26%) Samsung Corporation (Samsung Life 4.8%, Samsung Investment Trust Management 0.10%)
SK	SK (SK Life 0.47%) SK Telecom (SK Life 0.01%)
Hanhwa	Hanhwa (Hanhaw Securities Co. 4.94%)
Dongbu	Dongbu Corporation (Dongbu Life 9.46%, Dongbu Insurance 13.73%)
Dongyang	Dongyang Leisure (Dongyang Capital 35%), Dongyang Major (Dongyang Life 1.63%)
Taekwang	Taekwang Industrial Co. (Hungkuk Life Insurance 9.99%)

Source: Fair Trade Commission (2005).

and Samsung Fire and Marine Insurance hold 7.23% and 1.26%, respectively, of Samsung Electronics. Samsung Life Insurance and Samsung Investment Trust Management Co. hold 4.8% and 0.1%, respectively, of Samsung Corporation. Dongbu Life Insurance and Dongbu Insurance hold 9.46% and 13.73%, respectively, of shares of Dongbu Corporation, which is the Group's construction arm. Dongyang Capital holds 35% of Dongyang Leisure.

Thus, Korea's 14 largest *chaebol*, with more than 5000 billion won in assets, have found an effective means of bypassing regulations on intra-group investments in the form of a "circular pattern" of investments using in-house financial institutions. Each circle of intra-group investment includes several companies and major *chaebol* groups have several circles. For example, Samsung Everland holds 19.34% of shares of Samsung Life, which holds 4.8% of Samsung Corporation, which holds 1.48% of Samsung Everland. The circle continues as Samsung Corporation holds 4.02% of Samsung Electronics, which owns 20.38% of Samsung SDI, which then owns 4% of Samsung Everland. Similar practices are carried out by other major *chaebol*. Hyundai Motor Company owns 38.67% of Kia Motors Co., which in turn owns 18.19% of Hyundai MOBIS, which has again 14.59% of Hyundai Motor Company. Hanhwa Corporation has 24.21% of Hanhwa Petrochemical, which owns 100% shares of Hanhwa L&C Co. It again holds 6.44% of Hanwha Securities Co., which owns 4.94% of Hanhwa Corporation (Kim, 2006: 36-7).

As this kind of circular investment pattern developed, the government began to reinforce rules restricting collusion between financial and non-financial businesses. The ruling party and progressive civic movement organisations took a more critical approach and pushed the pragmatic-minded bureaucrats to come up with a viable reinforcement. It is against this background that the FISL has undergone a highly contested policy co-ordination and revision process.

The Financial Industry Structure Law

The revision of the FISL was one of the most politically controversial and contested issues in recent memory. The law was renamed in March 1997 to replace the existing Law on Merger and Transfer of Financial Industry. A key revision included an article that regulates investments by financial companies in non-financial businesses. Specifically, the article requires a financial company to obtain approval from the Minster of Finance and Economy (from May 1999, the Chairman of the Financial Supervisory Commission) if it intends to acquire 5% or more of the shares of a company belonging to the same business group; for companies not belonging to the same group, the limit is 20%. In January 2000, measures specifying fines for violation of this regulation were added.

FISL was the key piece of legislation designed to implement the policy principle of separation between financial capital and industrial capital by restricting directly the circular investment pattern of *chaebol* companies. For some years following the Asian financial crisis, during which Korea's financial industry was undergoing unprecedented restructuring under the IMF-mandated financial reform drive, FISL received little attention. By 2004, however, it became one of the most hotly contested issues in Korean politics, with all the key players – the government, political parties, business, and civic movement organisations – fully engaged in the dynamic game of formulating new rules on the *chaebol* and their financial institutions.

Party Politics and the FISL

In April 2004 the Financial Supervisory Commission (FSC)[1] conducted a comprehensive probe into the activities of financial companies and reported that

ten companies were in violation of the FISL. This finding brought immediate public criticism that the existing penalties were too lenient to curb the illegal shareholding practices. Hardliners in the ruling Woori Party took the offensive, calling the law too soft and prompting the government to draft a revised FISL that was passed by the Cabinet on 5 July 2005. The government's revision included a "grandfather clause" that allowed the violation of the 5% ceiling if the shares were acquired before the introduction of the law (in March 1997). If not, however, no voting rights beyond 5% would be recognised.

Dissatisfied with government's revised draft, a number of parties proposed alternative drafts. The Woori Party independently drafted a revised FISL banning voting rights regardless of acquisition dates and requiring any company in violation of the new law to sell its excessive share over the next five years. A failure to comply would subject the company to daily fines. Even when excessive shareholding was approved by the government in cases of restructuring or a merger, the draft law would have required a financial company to seek new approval when the shareholding reached 25% and then again when it reached 33%. The Democratic Labor Party (DLP) also submitted its own revised draft, sharing the Woori Party's views and being even tougher by shortening the grace period for excessive shareholding to two years. In contrast, the major opposition Grand National Party (GNP) criticised both FISL revisions submitted by the government and other parties. It argued that government draft was too harsh in banning voting rights for excessive shares. As for the drafts of both the Woori Party and DLP, it criticised the elimination of the grandfather clause as essentially unconstitutional and said that limiting voting rights was sufficient rather than requiring the mandatory sale of excessive shares, which was an infringement of property rights. But, the GNP did not make this opposition position on the FISL its official party platform for fear of popular criticism of being lenient towards the *chaebol*. In June 2006, however, the GNP members in the Finance and Economic Committee of the National Assembly expressed interest in raising the shareholding ceiling to 10% for all companies, including the *chaebol*; the existing law allows 10% ownership only for foreign or domestic financial companies (*Money Today*, 27 June 2006).

With increasing controversy over the law's revision, by October 2005 the Blue House (Office of the President) intervened with a compromise position, stating that the acquisition of excessive shareholdings before the FISL's introduction should be allowed and that only those shares acquired after the law's enactment needed to be sold. Despite the Blue House's attempt at a compromise, the government and the ruling Woori Party were unable to narrow their differences.[2] The Blue House came in to mediate this conflict and, in late November 2005, the Woori Party recommended that those companies that acquired excessive shares before the law's enactment would be allowed to keep them and would only face a restriction on voting rights. At the same time, any excessive shares acquired after the law's enactment would have to be sold (Woori Party, 2005). This new draft finally passed in the Committee on Finance and Economy on 27 February 2006 after ten months of debate in the Assembly following the government's submission of an earlier draft in November 2004. Nevertheless, ambiguity and confusion remained regarding the ultimate ceiling of ownership acquired before the law's enactment. The last government FISL draft stipulated that this law is subject to Article 11 of the Fair

Trade Act specifying that financial or insurance companies could have a voting right up to the total sum of 15% shares of all intra-group companies in the case of a merger or a business transfer.

Political controversy has not ended, however, and the prospect for the law's ultimate passage remains uncertain. The Assembly's Finance and Economy Committee passed the draft with a margin of just one vote. The draft was expected to be passed in the April 2006 session of the National Assembly after the Judicial Committee's voting but the Assembly ended its regular session before doing so. The Assembly has yet to resume debate on the law and is unlikely to do so until after the December 2007 presidential election. The fate of the FISL will likely depend on the new government's policy approach on *chaebol*.

The Samsung Group and the Korean Business Community

The corporate governance of the Samsung Group emerged as the focal point in the controversy surrounding the revision of the FISL. When investigations were conducted into the financial companies of leading *chaebol* groups, Dongbu Group and Hyundai Group were also found to have violated the law. However, the move to reinforce the FISL soon became intermingled with highly public criticism of Samsung's corporate governance. Samsung Everland, in which Chairman Lee Kun-hee and his son Lee Jae-Yong hold 3.72% and 25.1% of total shares, respectively, was charged with maintaining a key position in the Group using the circular investment strategy with intra-group financial institutions. Samsung Card owns 25.64% of the shares of Everland, which owns 13.35% of Samsung Life Insurance's shares. Samsung Life Insurance again owns 7.24% of shares of Samsung Electronics, which owns 46.9% of total shares of Samsung Card. Thus, Samgsung Card is in obvious violation of the FISL by owning 20% more shares of Everland than is legally allowed, while Samsung Life Insurance has an excessive holding of 2.24% of Samsung Electronics' shares. If the revised FISL were to be enacted, within two years Samsung Life Insurance would lose 2.24% of its voting rights, representing the excessive shares of Samsung Electronics. But, it would be able to keep the excessive shares since they were acquired in 1998, before the introduction of the original FISL. On the other hand, Samsung Card's purchase of Everland shares occurred after the law's enactment, so that it would have to sell the excessive 20.64% of Everland shares within five years, in addition to the immediate nullification of its voting rights for the same excessive amount in the management decisions of Everland.

The nullification of voting rights of Samsung Life Insurance was criticised by both the business community and the GNP, since the revised FISL would penalise purchases made before the inception of the original FISL. The business community formally expressed concern over the finance industry's competitiveness through its lobbying arm, the Federation of Korean Industries (FKI). Specifically, its research body, the Korea Economic Research Institute (KERI), raised the issue of the vulnerability of Korean business to hostile takeovers by large foreign merger and acquisition firms. If Samsung Life Insurance's voting right for the excessive 2.24% share of Samsung Electronics was nullified, the Group's total share in Samsung Electronics would be reduced to 13.81%, weakening its influence over Samsung Electronics and exposing it to takeover. Although the Samsung Group can increase

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its combined shares in Samsung Electronics, this option is regarded as too expensive for the Group since each share of the Electronics costs about 700,000 won. The business community also protested that the revised FISL discriminated against domestic businesses in favour of foreign businesses, which do not face the same restrictions. KERI further stated that the revised FISL is likely to slow down the merger of financial institutions considered necessary for strengthening the financial industry's competitiveness. For example, Samsung Securities, Samsung Futures, and Samsung Investment Trust Management, each of which had less than 5% of the stocks of the Group's digital camera company Samsung Techwon, would have no incentive to merge since their maximum total share in Samsung Techwon would be reduced to 5% if they did so, rather than the combined 15% now (Lee and Kim, 2005).

Samsung Group had strenuously opposed the move to reinforce the FISL throughout 2004. By 2005, however, the Group had experienced a number of legal setbacks, which produced an enormous negative public reaction. First, the courts ruled against the top managers of Everland for incurring significant loss by issuing convertible bonds at a deflated price to Lee Jae-yong, the Samsung Chairman's son, in 1996. The case was first brought by the People's Solidarity for Participatory Democracy (PSPD), which viewed the sale of the bonds as an illegal and unethical manoeuvre to accomplish dynastic succession. The Group Chairman himself was involved in a separate investigation into charges of high-level corruption. Facing mounting public criticism and pressure, the Chairman announced that he would donate 800 billion won of his personal wealth to "social causes," in a typical *chaebol* move to ameliorate negative publicity and the subsequent worsening group image. In the face of these setbacks, the Group withdrew its opposition to the revised FISL and formally took the position that it would comply with the new law if it was enacted.

Korean Civil Society and NGOs

Korean civil society has long been divided over the issues related to social and economic reforms, and their actions and reactions to these reforms reflect the existing cleavage. Progressives have emphasised distribution over growth and addressed the need to control business concentration into bigger companies. On the other hand, conservatives have argued for further growth and government deregulation to boost the market. Progressive NGOs have been most active in monitoring *chaebol*'s corporate governance and pressuring the government for more reforms on the *chaebol* and their activities. The Citizens' Coalition for Economic Justice (CCEJ) and PSPD are the major civic movement organisations advocating economic reform.[3] PSPD, in particular, has been an ardent *chaebol* reformer. Established in 1994 by progressive lawyers and professors, PSPD has played the role of challenger to *chaebol* management and ownership structure. Its most high-profile activity has been the "small shareholders movement." Initiated in 1997, the movement succeeded for the first time in gathering sufficient minority votes to call a general shareholders' meetings, in which they began to regularly and effectively challenge the top management of many *chaebol*, including such giants as Samsung Electronics.

PSPD has also been highly critical of the Ministry of Finance and Economy (MOFE) for its FISL enforcement – or lack thereof – especially toward the Samsung Group. Immediately upon the passage of the revised FISL by the Cabinet in early July of 2005, PSPD's Economic Reform Center Chief Kim Sang-jo (2005a) criticised the government for abandoning the principle of the separation between financial capital and industrial capital and sacrificing market order to guarantee the Samsung's management control by its founding family. He also accused the MOFE of effectively sanctioning the Group's various illegal share acquisitions by adding exemptions in the revisions (Kim, 2005b). The government's final draft of the FISL submitted to the National Assembly did not satisfy the PSPD either, which argued that the new law should not provide any grace period for voting right restrictions. It was particularly critical of the position of MOFE where it defended the grace period on the grounds that, beginning in April 2008, another law (Article 11 of Fair Trade Act) would restrict all combined shares of Samsung financial institutions in Samsung Electronics to 15% (PSDP, 2006a). PSPD also argued that the revised FISL should not be passed in its current form since Samsung Life Insurance would be exempt from the law's compulsory release of excessive shares and Samsung Card would be allowed to have five years of grace period (PSDP, 2006b).

In sharp contrast, pro-business NGOs were critical of the revised FISL for its infringement of private property rights and its retroactive enforcement. The Institute of Free Enterprise provided the main voice in this regard. It has vigorously opposed the nullification of the voting rights of Samsung Life Insurance's excessive shareholdings in Samsung Electronics, maintaining that mandatory stock sales of Everland shares by Samsung Card would be unconstitutional since the original FISL did not contain such a rule. It further argued that there is no such thing as "desirable" corporate governance and, if there were, it would only be to make profits (Institute for Free Enterprise, 2006a). Another Institute for Free Enterprise (2006b) commentary critically pointed out that the FISL revision is redundant and excessive because it adds more regulations on top of the Fair Trade Act, which it considers already harsh. It calls for a change in anti-*chaebol* sentiments that give rise to today's anti-business regulations. A research organisation run by the Hyundai Group echoes these sentiments, warning that stepping up the separation between financial capital and industrial capital will severely weaken the domestic capital market (Hyundai Economic Research Institute, 2005).

The Korea Institute of Finance (KIF) (2006: 135-9), established in 1991 by Korean banks, takes the position of essentially supporting the revised FISL. It sees the revision as being desirable in simplifying the regulations of the financial industry, which needs to be kept separated from industrial capital. In doing so, KIF is reflecting the interests of the Korean banking sector, which is mindful of the intrusion of *chaebol* into the financial industry.

Conclusion

Recent political entanglements over the revised FISL demonstrate the cleavages that have developed in reforming corporate governance in the *chaebol*. Policy actors such as ruling Woori Party politicians and progressive civic movement organisations had

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taken the lead in criticising the *chaebol* and the government's tendency to compromise with them. They emphasise that their ownership structures are often illicit and are essentially undemocratic and must be reformed for the sake of fair competition and a stable market. On the other hand, liberal advocacy NGOs and think tanks representing *chaebol* interests defend them by emphasising free market principles and private property rights as well as the need for pragmatism and gradual reform. They include opposition party politicians who advocate improving the competitiveness of the financial industry by allowing increased *chaebol* investments. They stress that the principle of separation between financial capital and industrial capital is outdated and meaningless in today's universal banking system. The symbiotic government-business relationship, captured in the "Korea Inc." model, had broken up through the process of democratisation, deregulation and globalisation. The Korean government is increasingly taking up reform measures for democratic governance *vis-à-vis* the *chaebol*. With market opening pressure from foreigners, the government had liberalised the economy and eliminated rents that used to be channelled to the *chaebol*. At the same time, the *chaebol* themselves had become internationally competitive and more independent of government protection or subsidies. The 1997 financial crisis sorted out the weaker *chaebol* and the surviving *chaebol* have been successful in taking advantage of new business opportunities.

Despite encompassing economic reforms, both the government's regulations of *chaebol* and *chaebol* responses to these regulations demonstrate their path-dependent evolution. The government has built a complex regulatory regime that is often internally contradictory or redundant, leading to a patchwork of regulations that have resulted not only from the need to reform but also from an institutional inertia trying to maintain bureaucratic discretionary power. Complying with changing government regulations, the *chaebol* corporate governance has been quite successful in adapting to the evolving regulatory environment that was intended to be hostile to the management succession of the founding family. The institutional legacies of the developmental state and large business conglomerates are not likely to disappear in the near future; they will likely continue to evolve according to a changing economic environment.

Civil society, while sharing the sentiments and enthusiasm for reform, is divided over how to reform the *chaebol* corporate governance. Progressive civic movement organisations had demonstrated their capability in making their voices heard and even submitting their own reform proposals. In spite of differences and frequent conflicts, they have successfully forged a coalition with the reform forces in the government and the ruling party. In recent years, however, reform fatigue and weak economic performance have dampened their popular appeal. Still, traditional liberal voices critical of the government's regulations of *chaebol* have been unable to significantly defuse or redirect popularly held negative sentiments. It remains to be seen whether the possible power shift to the opposition party in the 2007 presidential election will reshape the delicate balance of the current social cleavages surrounding *chaebol* reforms. Whoever is in power, however, the developmental state is likely to maintain *chaebol* regulations to some extent, while the *chaebol* will continue to upgrade their corporate governance structure to their advantage. The game will go on.

Notes

[1] The FSC was created in April 1998 as an independent and superior decision body to integrate supervisory functions that had been scattered throughout several compartmentalised financial authorities. It is responsible for the promulgation and amendment of financial supervisory rules and regulations, the approval and permission for the business of financial institutions, and the deliberation and resolution of the supervisory agenda with respect to any inspections, examinations and sanctions on financial institutions.

[2] The apparent contradiction between the government and the ruling party can be understood if it is considered that government policy was planned by career bureaucrats who were more willing to accept free market and restrain excessive *chaebol* regulation. On the other hand, the ruling Woori Party politicians were eager to control the expansion of *chaebol* into the financial industry.

[3] For an overview of their activities, see their websites: http://www.ccej.or.kr and http://www.peoplepower21.org.

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EXHIBIT 8

Valuation and performance of firms in complex ownership structures: An application to Korean chaebols*

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Abstract

We propose new metrics to describe the complex ownership structure of business groups, and provide simple formulas and algorithms to compute these metrics. Our formulas allow us to compute cash flow and control rights for any group firm, irrespective of the degree of complexity of the group structure. Unlike previous literature, we can easily incorporate the effects of cross-ownership links in these calculations. Our algorithms also allow us to compute a precise measure of the degree of indirect (pyramidal) ownership of a group firm (the position of the firm in the group structure), to identify the presence of cross-shareholding loops involving any arbitrary number of firms, and to identify which firms are central to the control structure of the group. We illustrate these measures by describing in detail the ownership structure of Korean chaebols in the period of 1998 to 2004. In addition, we validate the usefulness of our new metrics by showing empirically that they are related to the valuation and performance of chaebol firms. Among other results, we show evidence that central firms and firms in cross-shareholding loops have lower valuations than other public Chaebol firms. The lower valuation of these firms is not explained by variation in measures of ownership concentration, and separation between ownership and control.

In most countries around the world individuals or families control a large number of firms through a complex arrangement of ownership chains. In many cases the family holds not only direct stakes in group firms, but also indirect stakes through other firms in the group. For example, one typical ownership structure is referred to as a *pyramid*. In this structure, the family achieves control of the constituent firms, by a chain of ownership relations: the family directly controls a firm, which in turn controls another firm, which might itself control other firms, and so forth.[1] Another type of inter-company link is through *cross-shareholdings*. In this ownership structure, firms in the group have mutual ownership relations: one firm in the group holds a stake in another, which, in turn, has a stake in the first firm. In general, many large family groups combine the pyramidal form with cross-shareholdings, leading to a complex web of ownership. These so called *business groups* are an important component of several countries' corporate landscape, accounting for a large fraction of their economic activities.[2], [3]

Yet, we still do not understand the causes and consequences of the complex structures of groups. In particular, the literature has only used rough measures to describe groups, mostly relying on variables such as whether a firm is part of a pyramid, or on simple proxies for the ultimate ownership stake of the controlling shareholder (such as his direct ownership stake).[4] The reasons for this are that alternative measures either do not exist or are hard to compute manually, and that data on ownership is difficult to obtain, specially for privately held firms in a group.

In this paper we make two contributions. First, inspired by recent theoretical work on business groups (e.g., Almeida and Wolfenzon (2006)), we provide a number of measures that can be used to describe their complex structure. Importantly, *none* of the computations require visualization of the group structure. Rather, all the computations directly use the matrix of cross-ownership links, and can be implemented with an algorithm. Thus, our measures can be easily calculated irrespective of the complexity of the group structure. Second, we use a unique dataset of Korean business groups (chaebols) to illustrate the computations of these new measures and to show that they contain important economic information as they are shown to be strongly correlated with valuation and profitability measures.

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[1] Pyramids are very common throughout the world. See, among others, Claessens, Djankov, and Lang (2000) for the evidence on East Asia, Faccio and Lang (2002) and Barca and Becht (2001) for Western Europe, Khanna (2000) for emerging markets, and Morck, Stangeland and Yeung (2000) for Canada.

[2] The literature sometimes uses the term "business group" to refer to other types of corporate groupings, such as those in which the member firms are tied together by common ethnicity of the owners, interlocking directorates, etc. An example is the Japanese keiretsu, an organization in which individual managers have considerable autonomy in their own firms but coordinate their activities through the president council and a common main bank (Hoshi and Kashyap (2001)). Another example is the horizontal financial-industrial groups in Russia (Perotti and Gelfer (2001), p. 1604). Some of the formulas derived in this paper (such as the algorithm to identify the presence of cross-shareholdings) are also useful to describe this type of corporate grouping.

[3] Claessens, Fan, and Lang (2002) find that, in eight out of the nine Asian countries they study, the top 15 family groups control more that 20% of the listed corporate assets. In a sample of 13 Western European countries, Faccio and Lang (2002) find that in nine countries the top 15 family groups control more than 20% of the listed corporate assets. See also Section 6 for evidence of the importance of Chaebols for the Korean economy.

[4] See the literature review in the next Section for more details.

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We start by providing a simple formula to compute the *ultimate cash flow right* of the controlling family. Although the special case of this formula for simple pyramids is well known ("the product of the cash flow stakes along the ownership chain"), the computation of ultimate cash flows rights in the presence of cross-shareholdings and loops is considerably more difficult because the number of ownership chains is infinite. The method we develop involves "following" a dividend through all these ownership chains. We show that this can be easily done using simple matrix operations. The final formula requires only information about the direct stakes of the member firms as well as the direct stakes of the controlling family. This methodology can also be applied to compute the *position* of a group in the firm and to determine whether a firm is in a *cross-shareholding* or even in any general circular ownership pattern.

The position of a firm in the group can be thought of as the distance between the firm and the controlling family in terms of the group structure. It is effectively a measure of the extent of pyramidal ownership of a group firm. For example, if a family holds only a direct stake in a firm, its position is equal to one. A firm that is controlled entirely through a stake held by another firm (i.e., controlled through a simple pyramid) has a position of 2. Besides these simple cases, our methodology allows us to compute the position of *any* firm, irrespective of the complexity of the group ownership structure.

Cross-shareholdings are relatively easy to compute manually when they consist of two firms (e.g., firm A owns shares in B, which owns shares in A). However, this case (which we call direct cross-shareholdings) is rare in Korean chaebols because of specific regulations (see Section 4). Such restrictions are also common in other countries (see, e.g., Faccio and Lang, 2002), perhaps inducing firms to create cross-shareholding loops that involve more than two firms. Because of the difficulty to manually identify the existence of cross-shareholding loops that involve three or more firms, most of the previous literature on group ownership either explicitly ignores cross-shareholdings, or else conjectures that such structures are not very common (see Section 1). In contrast, our methodology allows us to identify cross-shareholdings involving any arbitrary number of firms, and to measure how many firms belong to the cross-shareholding loop.

Next, we tackle the issue of computing the voting right of the controlling family in each group member. The difficulty here is that it is not clear what fraction of the votes held indirectly through a group firm belongs to the controlling family. The common procedure in the literature has been to use the concept of weakest link (see. e.g., Claessens, Djankov, and Lang (2000)). For example, if the family holds 20% of the votes of firm A, which holds 50% of the votes of firm B, Claessens et al. would assign 20% of B's votes (the minimum of 20% and 50%) to the family. Although this concept makes intuitive sense for simple pyramids, it is less intuitive –and not even well defined—for groups with extensive cross-shareholdings.

We propose two alternative measures that are based on two simple –albeit not uncontroversial– assumptions. First, we assume that a family obtains control of a firm when it holds more than a threshold, say T, of votes. Second, we assume that, if a family controls a firm, it owns the votes that this firm holds in other firms. With these two simple assumptions, we can determine, for a given control threshold T, the set of firms that a family controls. Even though applying this definition is sometimes circular (to determine whether you control firm A, you need to know whether you control B and its votes in A, but to know whether you control B, it is possible that you need to know whether you control A and its votes in B),

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we can show that it is well defined for any group structure. Moreover, we provide a simple algorithm that can be used to find such a set.

Our two alternative measures are the *consistent voting rights (VR)* and the *control threshold (CC)*. The first one depends on the threshold considered. After determining the set of firms controlled by the family for the given threshold, the VR measure is simply the direct votes of the family plus the indirect votes held by firms the family control (for a threshold T).[5] The CC measure is the maximum threshold consistent with family control of the firm. It has various advantages. First it is not dependent on any particular threshold. Second, it coincides with the weakest link measure in simple pyramids. This is appealing because for these structures, the weakest link measure is intuitive. Finally, it only requires computation of the set of firms controlled by the family for various controlled thresholds. This can be easily done with the algorithm we propose.

As an application of our control measures, we compute the *centrality* of a firm in the group. The concept that we want to measure is how important a firm is for controlling other group firms. The centrality measure is computed as the average drop in CC (across all group firms) when a firm is hypothetically eliminated from the group. Firms that own substantial stakes in other firms will have high centrality, and specially so if it has an important hierarchical position in the group structure. For example, if firm 1 owns shares in firm 2, firm 1 is likely to be central. But centrality increases if firm 2 also holds shares in firm 3, because dropping firm 1 from the group compromises the control of both firms 2 and 3.[6]

We apply these new measures to understand the ownership structure of Korean business groups (*chaebols*). Chaebols are an ideal object for our methodology, given the complexity of their ownership structures (more on this below). In addition, the political situation surrounding chaebols in Korea allowed us to obtain extremely detailed ownership data on chaebol firms.[7] Up until the 1990s, Korean chaebols were credited with being one of the most important factors in Korea's rapid growth. This view appeared to change in the 1990s, as the chaebols began to be seen by some as an obstacle to growth. Too much political power (as evidenced by a number of corruption scandals), almost total control of product and financial markets, and excessive debt levels are some of the reasons why the chaebols were believed to be hampering growth. As a consequence of this political change, and among other regulatory measures discussed below in Section 4, Korean regulators have considerably tightened the disclosure requirements for Chaebol firms. In particular, since 1998 the top Korean chaebols have to report their complete ownership information to the Korean Fair Trade Commission (KFTC). These reports include ownership and accounting data on *private* chaebol firms.

A quick look at the summary statistics of these groups reveal that they are highly complex, comprising on average of several dozen firms with many layers and cross-shareholding loops with more than two firms. Consider for example Figure 6, which contains a slice of the ownership structure of the Hyundai Motor group in 2004. Even with the aid of the picture, it is difficult to understand the links between the firms, and to summarize these links in a few firm-specific variables. However, it is straightforward to use our algorithms to compute the

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[5]This measure is similar to that used by LaPorta, Lopez-de-Silanes and Shleifer (1999) and Lins (2003).

[6]Because this hierarchical aspect of centrality can only be captured with the variable *CC*, we use that variable to compute centrality instead of *VR*.

[7]In Korea, there is an official (though not legally binding) definition of what constitutes a Chaebol firm. See the discussion in Section 4.

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basic ownership characteristics of all the firms in this picture. For example, our calculations show that Hyundai Motor is the key firm for the control of the group (highest centrality), and they identify that Hyundai Motor, Kia Motor and INI Steel belong to a cross-shareholding loop with 3 firms in it (Hyundai owns shares in Kia, which owns shares in INI, which owns shares in Hyundai).

We compute the ownership variables for all Chaebol firms from 1998 to 2004, and provide a novel characterization of the average ownership structure of a Korean Chaebol (depicted in Figure 7). An average chaebol has 16 firms, with roughly three layers in its ownership structure. On average 3 out of the 16 firms (firms 1, 2 and 3 in the Figure) are owned directly at the very top of the group (layer 1). These firms might have ownership in other chaebol firms, but other firms do not own shares in them. Unlike previous literature, which does not report a significant degree of cross-shareholdings (e.g., Claessens et al., 2000), we find that approximately 25% of the firm-years consist of firms that belong to cross-shareholding loops. The typical loop in Korea contains 3 firms, which might explain why previous studies have been unable to manually identify the presence of such loops. Because of the substantial cross-holdings, these firms are not owned directly by the family (the average position among firms that belong to loops is 1.85). Thus, they comprise what we can think of as layer 2 of a typical chaebol (the middle layer). The firms in this middle layer are more likely to be public, and they are larger and older than other Chaebol firms. The firms in this layer are also the firms that are likely to be central for the group control structure (i.e., they own substantial stakes in other firms in the third layer). In this third and bottom layer (which contain all the other firms), we have firms that are more likely to be private, smaller and younger. They are also less likely to own substantial stakes in other firms (less central, less likely to belong to cross-shareholding loops).

Regarding the more standard ownership variables, we find that the family holds a large fraction of both cash flows and votes in Chaebol firms, with significant separation between ownership and control. The average cash flow stake help by the family is 21%, which is lower than both the VR (68%) and CC (33%) measures of control. There is also a significant degree of pyramiding. The average position of a chaebol firm is 2.11, indicating that the average firm is in fact controlled through a pyramid (which may include cross-shareholdings). As expected, firms at the bottom of the group (high positions) show lower ownership concentration, and high separation between ownership and control. Nevertheless, there is no consistent relationship between ownership concentration and centrality. For example, whether central firms have higher or lower separation between ownership and control depends on the measure of the voting rights that we use. The controlling shareholder has less cash flow rights in firms that belong to cross-shareholdings loops, but again it is not clear whether firms in loops show higher or lower separation between ownership and control than other chaebol firms. These descriptive results suggest that standard ownership variables are not summary statistics for the entire structure of the chaebol.

Provided with detailed ownership characteristics of all Chaebol firms, we proceed to correlate these variables with measures of profitability and valuation. We were able to obtain accounting data for most chaebol firms (including private firms, which comprise approximately 75% of the sample), and stock market data for all those that have been public in any period between 1998 and 2004 (approximately 25% of the firm-years).

In order to provide measures of profitability for Korean Chaebol firms, it is important to

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understand the effect that equity stakes held in other firms have on reported asset and profit figures. Essentially, if firm A owns shares in firm B, firm B's equity and profits will affect reported asset and net income figures for firm A. Luckily, the proxy statements contain enough information to allow anyone to back out the exact amount by which accounting figures have been adjusted.[8] We compute measures of operating assets and profits, which are defined as the asset and profit values that the Chaebol firm would have excluding the adjustments due to equity stakes held in other firms. These asset and profit figures reflect the individual assets and profitability of each Chaebol firm. We can then compute a measure of firm profitability by dividing operating profits by operating assets (we call this "operating ROA").[9]

We regress operating ROA on ownership variables, controlling for basic firm characteristics such as size, age, industry and public status. Naturally, these regressions do not have a causal interpretation. Nevertheless, they show some interesting correlations. Consistent with previous literature, we find that firms in which the controlling shareholder has higher cash flow rights have higher operating performance. We also find that ultimate ownership is more robustly related to operating performance than both measures of separation between ownership and control. Finally, we find that central firms show lower operating performance than other similar group firms. These results hold after controlling for group dummies, suggesting for example than within the same group the least profitable firms tend to be central firms in which the controlling shareholder does not hold large ownership stakes, though not necessarily higher separation between ownership and control.

The market valuations of (public) group firms is also related to the complex ownership variables that we measure in the paper. We compute three alternative measures of Tobin's Q (market-to-book ratios) using different definitions of market and book values of assets. These alternative definitions correspond to different levels of consolidation of the accounting statements and of market values of equity. Our valuation regressions control for industry, profitability, size, age, growth opportunities, leverage and group dummies. These valuation regressions do not corroborate some of the findings of previous literature, which has focused on standard ownership variables. We find that the correlations between ownership variables and valuation are nor robust to the inclusion of group dummies, for example. Thus, while the CC measure of separation is negatively related to Q, this result is driven entirely by the fact that *groups* with higher CC separation have lower Q. In contrast, we find that central firms (specially) and firms that belong to cross-shareholding loops carry lower market valuations than other group firms. The negative correlation between loop, centrality and Q holds after controlling for ultimate ownership and/or measures of separation between ownership and control, and also group dummies. Thus, within each group firms in cross-shareholdings and specially central firms are those with lower valuations than other group firms.

We also discuss some possible explanations for the negative relation between centrality/loop and market valuations.[10] In particular, we argue that the low valuation of central firms could be due to shareholder's anticipation of future negative NPV pyramidal invest-

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[8] Before 2003, these data are only available from footnotes to the financial statements, which we collected.

[9] We believe we are the first ones in the business group literature to provide profitability measures that are clean of equity stake-related adjustments.

[10] This result is linked to the closed end fund puzzle, and to a literature that examines parent company discounts in the US. See the discussion in Section 7.4.

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ments made by these firms, as suggested by Almeida and Wolfenzon (2006). In addition, these low valuations can also be a consequence of a lack of marketability of equity stakes held by central firms in other group firms (Longstaff, 1995).

The next section presents a short review of the literature. Sections 2 and 3 introduce our methodology to compute ownership variables for group firms. In Sections 4 and 5 we describe the legal and regulatory framework of Korean Chaebols, and the data that we use. In Section 6 we present the results that describe the ownership structure of Korean chaebols, and in Section 7 we relate the ownership variables to performance and valuation.

1   Related Literature

Existing literature recognizes that business group's ownership structure is a potentially important determinant of firm performance and valuation.[11] For example, Bertrand et al (2002) use a sample of Indian business groups to show that group membership is harmful to performance because it provides incentives for the family to tunnel resources from the firms lower down in the pyramid to firms at the top. In the context of Korean chaebols, Baek, Kang and Lee (2007) argue that discounted equity issues are more likely when the controlling shareholder has higher ultimate ownership in the acquirer than in the issuer. Baek et al. (2004) focus on the effects of Asian crisis on Korean firms, and show evidence for a stronger impact of the crisis on Chaebol firms, specially if ownership by the controlling shareholder is higher, and if other firms own more shares in the Chaebol firm.[12]

Despite their focus on cash flow rights, these papers rely on relatively rough measures of ownership concentration. For example, the paper by Bertrand et al. uses direct ownership by the controlling shareholder to measure ultimate ownership, thereby ignoring the impact of the indirect stakes of other group firms. The papers by Baek et al. do contain computations of ultimate ownership that take indirect stakes into account, but these computations ignore cross-shareholdings, and incorporate only the effect of two layers of control chains (two-firm pyramids).

The extensive descriptions of the ownership structure of Asian (Claessens et al., 2000) and European (Faccio and Lang, 2000) firms contain some discussion of the effect of cross-shareholdings on ultimate ownership. However, their results likely undertstate the effects of cross-shareholdings. For example, Faccio and Lang manually check for the incidence of direct cross-shareholdings (A owns shares in B which owns shares in A), and do not find many cases in their data. However, we the Korean data will show, cross-shareholding loops that include more than two firms are very common. In fact, Faccio and Lang say that most countries impose a 10% cap on direct cross-shareholdings, which effectively limit the extent to which direct cross-shareholdings can occur. As discussed by Claessens et al., the manual computations used in their paper and most of the previous literature have a hard

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[11]Of course, this does not mean that ownership is the only dimension of group structure that is relevant. Khanna and Thomas (2005), for example, show that stock price comovement in Chilean firms is greater when directors overlap than when firms belong to the same pyramid. These results are consistent with a more informal definition of groups, one that is not based only on ownership. See also Khanna (2000).

[12]For broader reviews of the literature, see Morck, Wolfenzon and Yeung (2005), and Khanna and Yafeh (2007).

time following all the links that can lead to cross-shareholdings.[13]

The formula that we use in this paper to calculate ultimate ownership has been previously derived by Brioschi et al. (1989) and Flath (1992). It can easily incorporate the effects of cross-shareholdings, and chains of ownership of any degree of complexity. However, unlike the current paper, these previous studies do not compute the additional ownership characteristics that are related to the computation of ultimate ownership (position and the presence of cross-ownership loops).

In addition, the current paper also provides automated formulas for the computation of control (voting) rights. Previous literature has relied on manual computations that are either based on the minimum link idea (Claessens et al, 2000, Barontini and Caprio, 2004, Claessens et al, 2002,), or simply the sum of direct stakes held by the controlling shareholder, and indirect stakes held by firms controlled by this shareholder (LaPorta et al., 1999, Aganin and Volpin, 2003, and Lins, 2003).[14] As we show later, one of our measures of voting rights is close to the second set of calculations (sum of direct and indirect stakes). However, the minimum link methodology cannot be easily extended to structures more complex than simple pyramids. Instead, we propose a new measure of control rights (the "critical control threshold"), on which we base our new measure of "centrality" of a firm for the group's ownership structure.

Besides ownership concentration and the separation between ownership and control, existing literature has focused on the relation between pyramidal (indirect) ownership and performance. Claessens et al. (2002) and Volpin (2002) provide evidence that firms in business groups organized as pyramids have lower Tobin's Q than stand-alone firms and firms organized in horizontal groups. Holmen and Hogfeldt (2004) suggest that this undervaluation is greater if the controlling shareholder has lower ultimate ownership. This literature usually defines a pyramid as any ownership structure that involves indirect ownership. In contrast, we propose a more precise, continuous measure of the extent to which a firm is owned through a pyramid (the "position" of a firm in the group structure).

The literature also examines the relationship between valuation and firm membership in business groups, without distinguishing between pyramids and other types of groups. See Khanna and Rivkin (2001), Khanna and Palepu (2000), Fisman and Khanna (2000), and Claessens, Fan and Lang (2002). This literature reports mixed results.[15] Khanna and Palepu (2000), for example, find a positive effect of group membership in their sample from India. However, their effect is limited to the largest business groups.

There is also some evidence that firms that are owned through pyramids are smaller and younger than firms at the top of the group (those that own shares in other firms). Aganin and Volpin (2005) describe the evolution of the Pesenti group in Italy, and show that it was

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[13]Other papers follow similar simplied methodologies to compute cash flow rights (see, e.g., Lemmon and Lins, 2003, Lins, 2003, Aganin and Volpin, 2005, Bae et. al, 2002, and Barontini and Caprio, 2004). The paper by LaPorta et al (1999) does not contain calculations of ultimate ownership.

[14]Bebchuk, Kraakman and Triantis (2000) discuss some of the issues that arise from cross-shareholdings, but they do not provide general formulas that deal with the effect of cross-shareholdings on ownership.

[15]This statement also applies to the literature that compares Korean chaebol to non-chaebol firms. For example, Chang and Choi (1988) present some evidence that suggests greater profitability of chaebol firms when compared to stand-alones. On the other hand, results in Joh (2003) suggest that chaebol firms are less profitable than independent ones.

created by adding new subsidiaries to the firms the Pesenti family already owned. One of their conclusions is that in Italy, business groups expand through acquisitions when they are large and have significant cash resources. Claessens, Fan and Lang (2002) find that firms with the highest separation of votes and ownership (i.e., those owned through pyramids) are younger than those with less separation. Pyramidal firms also seem to be associated with larger scales of capital investment. Attig, Fischer, and Gadhoum (2003) find evidence consistent with this implication, using Canadian data. Claessens, Fan and Lang (2002) also find that in East Asia, group firms tend to be larger than unaffiliated firms. Bianchi, Bianco, and Enriques (2001) find similar evidence for Italy.

2   Ultimate cash flow rights: definition and calculation

The definition of *ultimate* cash flow rights of the controlling family in a particular firm is the fraction of the dividends paid by that firm that is (eventually) received by the family. Because the ownership structures of business groups are usually quite complex, typically involving a fair number of inter-company holdings (e.g., pyramids and cross-shareholdings), only part of the dividends that the controlling family receives are due to its direct stake.

To incorporate the proceeds that arise due to the indirect holdings, we propose an algorithm (the *dividend algorithm*) that allows us to *follow* the original dividend through group companies. Importantly, we are able to represent each stage in the dividend algorithm as a simple matrix operation. The matrices needed require information only about the direct stakes in each group firm. This allows us to easily automate the process and to dispense with the need to consider all the potential chains. Our method is general enough to accommodate *any* number of firms and *any* possible ownership structures (i.e., any possible configuration of inter-company holdings). To illustrate the use of the formula, we apply it to some examples.

In the last part of this section, we provide three additional applications of our dividend algorithm. First, we propose a formula to find the position of a firm in a group. Second, we propose a way of identifying whether a particular firm is part of a cross-shareholding loop. This method can identify not only direct cross-shareholdings (i.e., A owns shares in B which owns shares in A), but also any form of circular holdings (i.e. A owns B which owns C which owns A), irrespective of the number of firms in the loop. Finally, we propose a formula that relates the stand-alone value of all group firms (the value the firms would have without their stakes in other firms) to their observed market values.

2.1   The dividend algorithm

The algorithm follows a dollar of dividend paid by a firm. In the first stage, we assume that the firm under consideration pays one dollar in dividends. We then use the *direct* stakes of owners of this firm to compute the amount received by the family and the amounts received by other group firms. In the second stage, we assume that group firms that received a dividend in the first stage pay it out in full as dividends. Then, we again compute the amount received by the family and the amounts received by group firms. We continue with this procedure for an indefinite number of stages. Finally, we add the amounts received by
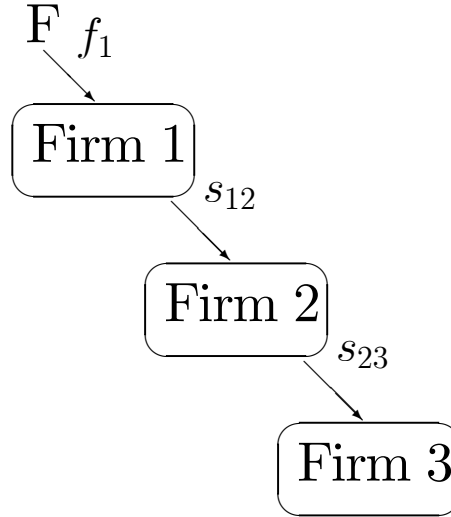
$$\text{F} \, f_1$$

Firm 1

s_{12}

Firm 2

s_{23}

Firm 3

Figure 1: A simple pyramid

the family in all stages.

Example 1: A simple pyramid

Figure 1 shows a pyramid with no cross-shareholdings. The family owns a fraction f_1 of firm 1, firm 1 owns a fraction s_{12} in firm 2, and firm 2 holds a fraction s_{23} in firm 3. We compute the ultimate cash flow stake of the family in firm 3.

The algorithm calls for following a dollar paid by firm 3. In stage 1, firm 3 pays one dollar in dividends and firm 2 receives s_{23} dollars. The family does not receive anything at this stage. In stage 2, firm 2 pays out the cash it received, s_{23}. Firm 1 receives a fraction s_{12} of the dividend or $s_{12}s_{23}$. In stage 3, firm 1 pays dividends of $s_{12}s_{23}$ and the family receives a fraction f_1 or $f_1 s_{12}s_{23}$. At this point, all firms in the group have no part of the original dollar paid by firm 3, and so we can stop. Adding the dividends the family received in all stages, we obtain that its ultimate cash flow stake in firm 3 is

$$u_3 = f_1 s_{12} s_{23}$$

(as expected!).

Example 2: Cross-shareholding

Consider the structure in Figure 2. The family has a direct stake of f_1 and f_2 in firms 1 and 2, respectively. Also, firm 1 holds a stake of s_{12} of firm 2, and firm 2, in turn, holds a stake of s_{21} in firm 1. We compute the ultimate cash flow stake of the family in firm 2.

The algorithm proceeds as follows. In stage 1, firm 2 pays one dollar in dividends. The family receives f_2 and firm 1 receives s_{12}. In stage 2, firm 1 pays out the s_{12} dollars it received. Now, the family receives an additional $f_1 s_{12}$ and firm 2 receives $s_{21}s_{12}$. In stage 3, firm 2 pays out the $s_{21}s_{12}$ it received. The family receives $f_2(s_{21}s_{12})$ and firm 1 receives $s_{12}(s_{21}s_{12})$. As it is clear, we can continue doing this procedure indefinitely. From the pattern

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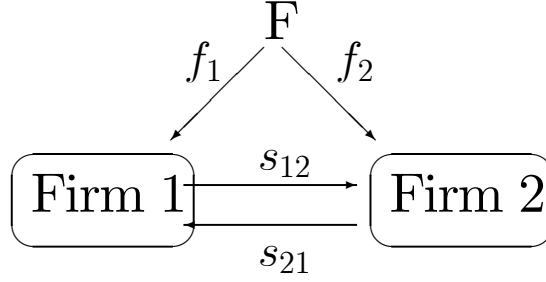
Figure 2: Cross-shareholdings

that emerges, we can compute the total amount received by the family by:

$$u_2 = f_2 + f_1 s_{12} + f_2(s_{21}s_{12}) + f_1 s_{12}(s_{12}s_{21}) + f_2(s_{21}s_{12})^2 + f_1 s_{12}(s_{12}s_{21})^2 + \dots \quad (1)$$

$$= \frac{f_2}{1 - s_{21}s_{12}} + \frac{f_1 s_{12}}{1 - s_{21}s_{12}}$$

As can be seen from the above, doing this process manually is tedious, even for a small group with 2 firms. Because business groups have many dozen –and sometimes over a hundred– firms and extensive inter-corporate holdings, the manual procedure we have described –although feasible– is not practical. To automate this algorithm, we turn to the derivation of the general formula in the next section.

2.2   A simple formula

Consider a business groups with N firms. With the *direct* ownership information, we construct a matrix of inter-corporate holdings as follows:

$$A = \begin{bmatrix} 0 & s_{12} & \dots & s_{1N} \\ s_{21} & 0 & \dots & s_{2N} \\ \vdots & \vdots & \vdots & \vdots \\ s_{N1} & \dots & s_{N\,N-1} & 0 \end{bmatrix}$$

where s_{ij} is the stake of firm i in firm j. In other words, column j contains the stakes of the corporate direct owners of firm j.

We also construct a vector of the direct stakes of the family in each of the N firms

$$\mathbf{f} = \begin{bmatrix} f_1 \\ f_2 \\ \vdots \\ f_N \end{bmatrix}$$

.

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Proposition 1 *The ultimate ownership of the family in each of the n firms is given by* $\mathbf{u} = [u_1\ u_2\ ...\ u_N]'$:

$$\mathbf{u}' = \mathbf{f}'(I_N - A)^{-1} \tag{2}$$

where I_N is the $N \times N$ identity matrix.

We use example 2 to illustrate how the formula is derived. Brioschi, Buzzacchi, and Colombo (1989) derive a similar formula using a different approach. To the best of our knowledge, our derivation of this formula (i.e., using the dividend algorithm), is new. Importantly, all the applications in the following section are based on the dividend algorithm.

Example 2 (revisited)

Take the group in Figure 2. In this case the matrix of intercompany holdings is:

$$A = \begin{bmatrix} 0 & s_{12} \\ s_{21} & 0 \end{bmatrix},$$

and $f = [f_1\ f_2]'$. Suppose we want to compute the ultimate ownership of the family in firm 2. According to the algorithm we need to follow a dollar of dividend paid by firm 2. We write the dividend that all firms pay in a particular stage in vector form. Thus, the initial dividend is given by:

$$\mathbf{d}_2 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}.$$

That is, firm 1 pays no dividend and firm 2 pays a dividend of 1. In the rest of the paper, we let $\mathbf{d}_i$ be the vector of zeroes with a 1 in the ith position.

We can now rewrite the computations we followed in the previous section in matrix form. Stage 1 is as follows. The dividends paid are $\mathbf{d}_2$. The family receives $\mathbf{f}'\mathbf{d}_2 = f_2$ and corporate owners receive $A\mathbf{d}_2 = [s_{12}\ 0]'$ (i.e., firm 1 receives s_{12} and firm 2 receives 0). In stage 2, corporate owners pay out the full amount they received in stage 1, i.e., $A\mathbf{d}_2 = [s_{12}\ 0]'$. The family receives $\mathbf{f}'A\mathbf{d}_2 = f_1 s_{12}$ and corporate owners receive $A(A\mathbf{d}_2) = A^2\mathbf{d}_2 = [0\ s_{21}s_{12}]'$. In stage 3, the dividend is $A^2\mathbf{d}_2$. The family receives $\mathbf{f}'A^2\mathbf{d}_2$ and corporate owners receive $A^3\mathbf{d}_2$.

A pattern emerges: starting from dividend $\mathbf{d}_2$ and after n rounds of dividends, the fraction of the original dollar held by corporate owners is $A^n\mathbf{d}_2$ and the family receives in this stage $\mathbf{f}'A^{n-1}\mathbf{d}_2$. The same algorithm can be repeated for any firm i in any group with a matrix of direct corporate holdings, A, and a vector of family direct holdings f, to obtain the ultimate ownership, u_i, which is the sum of the dividends that the family receives in all stages:

$$u_i = \sum_{n=1}^{\infty} \mathbf{f}'A^{n-1}\mathbf{d}_i = \mathbf{f}'\left(\sum_{n=1}^{\infty} A^{n-1}\right)\mathbf{d}_i = \mathbf{f}'(I_N - A)^{-1}\mathbf{d}_i.$$

This shows how the formula is derived.

2.3   Applications

We present three different applications of the methodology developed.

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2.3.1   Firm's position in a group

An important characteristic of the ownership structure of a business group is the position of a firm in the group. The basic concept we define is the distance between a family and a given firm along a particular path. This distance is simply the number of firms along the path.

We first define the shortest distance (sd) among all possible paths between the family and a particular firm:

Definition 1 *For firms in which the family's ultimate cash flow right is positive, the shortest distance, sd_i, from the family to firm i can be found by using:*

$$sd_i = \min\{n \mid n \geq 1 \ and \ \mathbf{f}'A^{n-1}\mathbf{d}_i > 0\}.$$

Recall that $\mathbf{f}'A^{n-1}\mathbf{d}_i$ is the dividend that the family gets in stage n from a dollar that originated in firm i. If a family owns a direct stake in firm i, it will receive a dividend in the first stage. Thus, $\mathbf{f}'A^{n-1}\mathbf{d}_i$ is strictly positive for $n = 1$, which is then the shortest distance as expected. If there are two firms separating the family from firm i (e.g., firm 2 in Figure 1), the first time $\mathbf{f}'A^{n-1}\mathbf{d}_i$ is positive is for $n = 2$, which, as expected, if the shortest distance.

Nevertheless, the shortest distance might not be the most relevant measure of position because there could be several different paths between the firm and the family and there is no particular reason to choose the shortest path. In order to compute a measure of position that takes all paths into account, we define the average distance (ad) of a firm as the weighted average of the distance along all possible paths. The weights we use are the fraction of the ultimate cash flow rights contributed by the particular path. As before, this measure can be easily computed as follows.

Definition 2 *The average distance, ad_i, from the family to firm i can be found by using:*

$$ad_i = \sum_{n=1}^{\infty} n \frac{\mathbf{f}'A^{n-1}\mathbf{d}_i}{u_i}$$

Example 4: Position in a simple pyramid

Consider the group in Figure 1. The position of the firms is straightforward in the case of pure pyramids. The shortest distance between firm i and the family in this example is equal to i ($sd_i = i$). Because there is only one path for each firm, these are also the average distances for the firms ($ad_i = i$).

Example 5: Position in a more complex pyramid

Consider now a slightly more complex example. Specifically, take the group in Figure 2, but assume that $s_{21} = 0$. In this case firm 2 is owned both directly (through the stake f_2), and indirectly, through the stake s_{12}. So we have $sd_2 = 1$, and:

$$ad_2 = 1\frac{f_2}{f_2 + f_1 s_{12}} + 2\frac{f_1 s_{12}}{f_2 + f_1 s_{12}},$$

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which is simply a weighted average of the direct path, and the indirect one through firm 1. If f_2 is very small, for example, then it is possible that ad_2 is close to 2, despite the fact that the shortest distance is equal to one.

An important feature of these formulas is that they only involve matrix computations and there is no need to actually construct all possible links among firms in the group. Thus, we can automate the position of a firm in a group.

2.3.2   Identifying general cross-shareholdings

We can also use the algorithm and its matrix representation to check whether a given firm is part of a circular ownership pattern and to compute the length of such loop.

Definition 3 *Let*
$$loop_i = \min\{n \mid n \geq 1 \ and \ \mathbf{d}_i' A^n \mathbf{d}_i > 0\},$$
then firm i is in a loop if and only if $loop_i < \infty$ and the number of firms in the shortest loop firm i is involved is given by $loop_i$.

Recall that $A^n \mathbf{d}_i$ is a vector of the cash held by each group firm after n stages of the algorithm from a dollar that originated in firm i. Because we are interested in the cash held by firm i itself, we pre-multiply by $\mathbf{d}_i'$ to get the ith element.

The idea is simple. If we start from a dollar paid by firm i and after n stages we see money reappearing in this firm, then it must be that the firm is part of a loop. Also, the number of stages needed for the money to reappear for the first time in firm i measures the number of firms in the shortest loop.

Example 6: Detecting circular ownership patterns

Let's compute the *loop* variable for firm 2 in the group of Figure 2. The first dividend is $\mathbf{d}_2$, corporate owners get $A\mathbf{d}_2 = [s_{12} \ 0]'$, and firm 2 gets $\mathbf{d}_2' A\mathbf{d}_2 = 0$. In the second stage group firms pay dividends of $A\mathbf{d}_2 = [s_{12} \ 0]'$, corporate owners receive $A^2\mathbf{d}_2 = [0 \ s_{21}s_{12}]$, and firm 2 gets $\mathbf{d}_2' A^2\mathbf{d}_2 = s_{21}s_{12} > 0$. Thus, $loop_2 = 2$. This implies, as we were expecting, that firm 2 is in a loop and that the loop has 2 firms in it.

3   Computing Control Rights

The computation of control rights in a complex group is challenging because it is not clear what fraction of the votes held by intermediate firms is controlled by the family. We start by discussing the weakest link idea that is frequently used in the literature. As we will show, this methodology is not readily implementable –and sometimes not even well defined– in groups with extensive cross-shareholdings. We discuss two alternatives to the minimum link method, including a novel definition of control rights that we call critical control threshold (CC).

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$$F \;\; 21\%$$

```
   F  21%
    ↘
 ┌─────────┐
 │ Firm 1  │
 └─────────┘ 51%
         ↘
      ┌─────────┐
      │ Firm 2  │
      └─────────┘
```
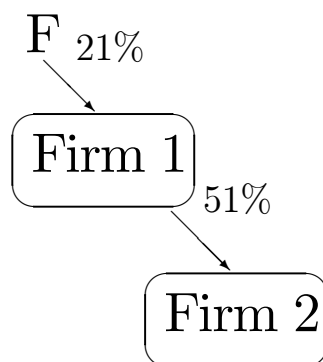
Figure 3: A very simple pyramid

3.1   The weakest link

Consider the following example of a simple pyramid in Figure 3. The family holds a direct stake of 21% in firm 1, and firm 1 holds a 51% stake in firm 2. Clearly, the family controls 21% of the votes of firm 1 through its direct stake. But what about firm 2? The *weakest link* method assigns the minimum voting stake in the chain of control. That is, the family is assumed to hold 21% of the votes of firm 2 as well. For simple pyramids, this measure is intuitive: Because control of firm 2 is obtained through firm 1, it cannot be the case that the family's degree of control is firm 2 is higher than that in firm 1.

However, the intuition is less clear for more complex structures. For example, when there are multiple chains leading to the same firm, the weakest link rule calls for computing the minimum votes along each chain and then adding these values. Why should this be the right way to do it? Because there is no theory behind this rule, it is difficult to say. Moreover, in groups with cross-shareholding and loops, there might be an infinite number of chains leading to a particular firm.

3.2   Two alternative measures

We now discuss two alternative measures of voting rights, which are easily implementable in groups with cross-shareholdings and are derived from two simple assumptions about control. Both measures require that we first determine the set of firms that the family control for a given control threshold T.

3.2.1   The set of firms controlled by the family

To compute the set of firms controlled by the family, we make two assumptions:

Assumption 1 *A family controls a firm if and only if it holds more than T votes in it.*

Assumption 2 *The votes that a family hold in a firm are the sum of its direct votes plus all the direct votes of firms under family control, where control is defined in Assumption 1.*

This definition of control is a combination of the idea of a control treshold (Assumption 1), plus the assumption that, if a family controls a firm, it controls the votes that this firm holds on other firms.

A potential problem with this definition is that, for groups with loops, it is impossible to implement this definition sequentially. Consider, for example, the group in figure 2. To figure out whether the family controls firm 2, we need to compute whether the family has more than T votes in this firm. The family holds some votes directly and might also hold indirect votes through firm 1. However, we can only assign the votes of firm 1 to the family if the family controls firm 1. Therefore, we need to determine whether the family controls firm 1. As it is clear, in order to determine this we need to know whether the family controls firm 2. But this was the question we started with!

The following proposition establishes the formal condition that the set of firms controlled by the family must satisfy (for a given control threshold T). Suppose we start the analysis with a set N, which contains all candidate firms that could be controlled by the family. This set can represent all firms in a country, or a pre-identified subset of those firms.

Proposition 2 *For a given treshold T, the set of firms controlled by the family is given by:*

$$C(T) = \{i \in N : f_i + \sum_{j \in C(T),\ j \neq i} s_{ji} \geq T\}. \tag{3}$$

In other words, the set $C(T)$ is the solution to a fixed point problem.[16] Finding such a fixed point might not be easy, specially for complex groups.

Example 7: Firms controlled by the family in a group with cross-shareholdings

Consider the group in Figure 4 and assume that $T = 25\%$. Let's try to determine whether firm 3 is controlled by the family. The family holds a direct stake of 10% in this firm. In addition, firms 1 and 2 have stakes of 20% and 10%, respectively. Thus, we would conclude that the family controls firm 3 if it controlled firm 1 (since $10\% + 20\% > 25\%$). However, we have not established yet whether the family controls firm 1. If we try to establish this, we run into a circular argument, since in order to determine whether the family controls firm 1, we need to establish whether it controls firm 3! (without control of firm 3, the most votes the family can control in firm 1 is $7\% + 8\% = 15\%$).

Fortunately, there is a simple algorithm that can be used to find $C(T)$ in any situation. We first provide a formal definition of the algorithm and then we explain how it works.

Definition 4 *(Algorithm) Let the sequence of sets $S(0) \supseteq S(1) \supseteq S(2)...$ be defined by $S(0) = N$, and $S(n + 1) = \{i \in S(n) : f_i + \sum_{j \in S(n),\ j \neq i} s_{ji} \geq T\}.$*

---

[16] Let $F(X) = \{i \in N : f_i + \sum_{j \in X,\ j \neq i} s_{ji} \geq T\}$. Then $C(T)$ then satisfies $F(C(T)) = C(T)$.

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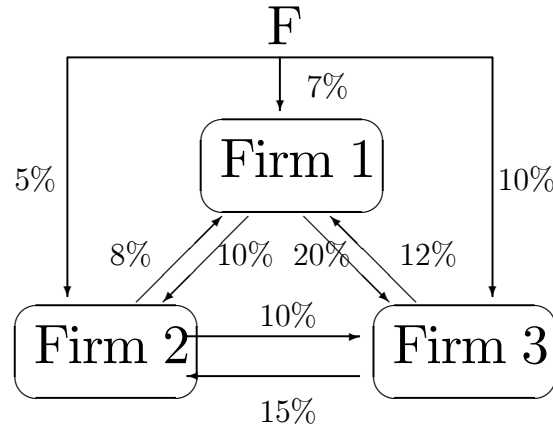
Figure 4: A complex group with many cross-shareholdings

The idea of this algorithm is to start with all the firms, $S(0) = N$. In the first stage, we assume that the family controls all the firms and we drop the firms in which the direct and indirect stake of the family is below T. This procedure generates $S(1)$. Next, we assume that the family controls only the firms in $S(1)$ and again drop from $S(1)$ the firms in which the direct and indirect stake of the family is below T (of course, we only consider indirect stakes of firms that are in $S(1)$). This generates $S(2)$. We can repeat this algorithm a number $\sharp N$ of times to arrive at $S(\sharp N)$. This last set is important in light of the following Proposition.

Proposition 3 $S(\sharp N)$ *satisfies condition 3.*

The proof of this proposition in the Appendix. Proposition 3 is important for two reasons. First, it shows that the outcome of the algorithm generates what we are looking for: the set of firms that the family controls for a given threshold T. Second, because the set $S(\#N)$ can always be computed (after all, $\#N$ is finite), Proposition 3 shows that there always exists a set that satisfies condition 3. In other words, our notion of the set of firms controlled by the family is well defined.

A property that simplifies the algorithm is that if $S(n) = S(n+1)$ for $n < \sharp N$ then $S(\sharp N) = S(n)$. This means that we can stop the algorithm the first time we do not drop a firm.

Example 7 (revisited)
Let's now apply the algorithm to the group of Figure 4. We first assume that the family controls the three firms, $S(0) = \{1, 2, 3\}$. Next we compute the voting rights. The family holds 27% of the votes in firm 1 (7%+8%+12%), 30% of the votes in firm 2 (5%+10%+15%) and 40% of the votes in firm 3 (10% + 20% + 10%). Since all three quantities are larger than 25%, we do not drop any of the firms and hence $S(1) = \{1, 2, 3\}$. Because we did not drop a firm, it is the case that $S(3) = S(1) = \{1, 2, 3\}$. By Proposition 3, $C(25\%) = \{1, 2, 3\}$

Let's now apply the algorithm to compute $C(30\%)$. We let $S(0) = \{1, 2, 3\}$. As before, we get that the family holds 27%, 30%, and 40% in firms 1, 2, and 3, respectively. Because the votes in firm 1 are below the threshold, we drop it and so $S(1) = \{2, 3\}$. We again compute

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the votes assuming the family controls firms 2 and 3. Under this assumption, we get that the family controls 20% in firm 2 ($5\% + 15\%$) and 20% in firm 3 ($10\% + 10\%$). We drop both firms because the votes of the family fall below the threshold. As a result, $S(2) = \emptyset$. Because we can no longer drop firms, it must be that $S(3) = \emptyset$. By Proposition 3, $C(30\%) = \emptyset$. That is, the family controls no firm for a control threshold of 30%.

Before defining our two measures of control rights, it is important to note that there might be multiple sets that satisfy condition 3. For example, we showed in Example 7 that $C(25\%) = \{1, 2, 3\}$. However, the null set also satisfies condition 3 for the same control threshold. To see this, suppose that the family controls no firms, then its voting rights in firms 1, 2 and 3 are 5%, 7%, and 10%, respectively. Note that all of them are below the threshold of 25%, confirming that the family does not control any of these firms.

Because in the case of Korea the firms with which we start (the set N) have already been pre-classified as members of the chaebol, we would like to choose the set that satisfies condition 3 and at the same time has the maximum number of firms. Fortunately, we can prove the following Proposition.

Proposition 4 *Consider all possible sets of firms that satisfy condition 3 for a given control threshold T: $C_1, C_2, \ldots, C_M$. The following holds: $S(\sharp N) = \bigcup_{i=1}^{M} C_i$.*

This Proposition of important for two reasons. First, it tells us that there is a unique set that has the maximum number of firms over all the sets that satisfy condition 3. This is important since it removes the arbitrariness of picking a set among many. Second, the proposition tells us that the outcome of the algorithm is precisely the set we are looking for.

3.2.2   Consistent voting rights

We use the set of firms controlled by the family to suggest a simple measure of control rights

Definition 5 *Given a threshold T, the* consistent voting rights *of the family in firm $i \in C(T)$ are defined as:*

$$VR_i(T) = f_i + \sum_{j \in C(T),\ j \neq i} s_{ji}$$

In words, to find the family's sum of votes in firm i we simply sum the direct votes held by the family in firm i with all the indirect votes held by other firms that belong to $C(T)$. The resulting distribution of voting rights, $\{VR_1(T), VR_2(T)...\}$ is *consistent* with the control threshold T, in the sense that $VR_i(T) \geq T$ for all i. For example, in the group of Figure 4 we would have $\{VR_1(T), VR_2(T), VR_3(T)\} = \{27\%, 30\%, 40\%\}$, for $T \leq 27\%$.

3.2.3   Critical control threshold

Our second measure of control rights is as follows.

$$\text{F}$$

25%   10%

| Firm 1 | 40% | Firm 2 |
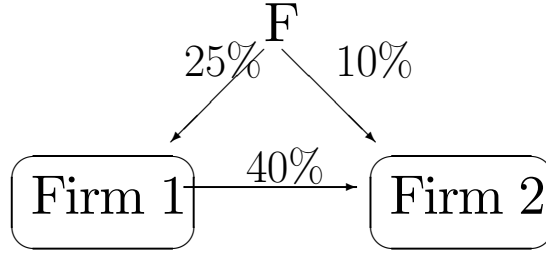
Figure 5

Definition 6 *For any firm $i \in N$, the* critical control threshold *is given by*

$$CC_i = \max\{T \mid i \in C(T)\} \tag{4}$$

The critical control threshold is the *highest control threshold that is consistent with family control of firm i.* In other words, if the control treshold were higher than CC_i, then firm i would not be part of the set of firms controlled by the family.

Several observations are in order. First, notice that in Figure 3 the critical control thresholds are 21% for both firms. We can think of CC as a well defined measure of control rights that coincides with the weakest link measure for simple pyramids. This is important because the CC measure respects an intuitive idea about control: If a family controls firm 2 through firm 1, its control of firm 2 cannot be higher than that for firm 1. The consistent voting rights measure does not satisfy this simple property as it is evidenced in the example above.

Second, the advantage of the CC measure is that it is based on the same algorithm of section 1. In order to compute CC for any arbitrary set of firms, we simply run the algorithm of section 1 sequentially with increasingly higher control thresholds, and we keep track of the threshold T at which each firm is dropped from the set $C(T)$. The routine can be entirely automated, and thus dispenses with the need for the researcher to draw the group structure and examine all (possibly infinite) links.

Third, CC is a measure of control rights that is independent of the particular control threshold T. This is convenient because there is no agreement about what is a reasonable value for T.

In order to further illustrate the CC definition, we consider an additional example.

Example 8: CC for a pyramid with multiple chains

Consider the group in Figure 5. The family holds a 25% stake in firm 1, which holds a 40% stake in firm 2. The family also holds a 10% direct stake in firm 2. Thus, there is both a direct chain of control leading to firm 2, and an indirect one going through firm 1.

In this example, our methodology would produce the following numbers:

$$\{VR_1(T), VR_2(T)\} = \{25\%, 50\%\}, \text{for } T \leq 25\%$$
$$\{CC_1, CC_2\} = \{25\%, 25\%\}$$

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The family controls neither firm if $T > 25\%$. In comparison, the weakest link methodology would call for separately considering all the links between the family and firm 2. There is an indirect link through firm 1, with minimum link equal to 25%, and a direct link of 10%, yielding a voting stake of 35% in firm 2.

3.2.4   An application of CC: measuring the centrality of a firm for the control of the group

We can use the CC measure to easily calculate a statistic that summarizes how important a given firm is for the control of the overall group. For example, take the group in Figure 5. In this example, firm 1 is important for the control of the group (because firm 1 holds a significant stake in firm 2), while firm 2 is not (because it does not hold shares in firm 1). An easy way to capture this difference is to drop both firms (one by one) from the group's ownership matrix, and then calculate the decrease in CC for the other group firms. For example, if firm 2 is dropped from Figure 5, CC_1 is unchanged. In contrast, if firm 1 is dropped, CC_2 goes down from 25% to 10%. These calculations suggest the following definition for a firm's centrality in the group control structure:

Definition 7 *We define the* centrality *of a firm i as:*

$$
central_i = \frac{\sum_{j \neq i} CC_j - \sum_{j \neq i} CC_j^{-i}}{\sharp N - 1}, \tag{5}
$$

where CC_j^{-i} is the critical control threshold of firm j, computed as if firm i held no shares in the other group firms.

In words, we compute the centrality of firm i as the average decrease in CC across all group firms other than firm i, after we exclude firm i from the group. This formula, as the previous ones, can be implemented for any group structure.

We use the CC measure for the definition of centrality rather than the consistent voting rights because the former measure incorporates to a larger extent the overall group structure whereas the latter measure is mainly affected by firms directly above.

4   Korean Chaebols: Definition and Regulatory Framework

A "Chaebol" is a South Korean's business group consisting of many firms in diverse business areas that are owned and controlled by family members.

4.1   Regulatory Framework for Chaebols

Chaebols are mainly regulated by laws pertaining, though strange, to competition policies. This contrasts with legal regimes addressing regulation of corporate groups in other countries: laws relating to holding companies in the US, a specialized law of corporate groups,

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Konzernecht, in Germany, and special provisions addressing group-related issues in European company laws.[17] Although the main purpose of regulating business groups in other countries is to protect creditors and minority shareholders against the opportunism of controlling shareholders, its main purpose in Korea is to deter excessive concentration of economic power into a small number of large companies. Lacking a legal regime to address concentration of economic power, Korea has relied on the Monopoly Regulation and Fair Trade Act (hereafter just Fair Trade Act or FTA). The government agency to oversee the FTA is the Fair Trade Commission (FTC) that was established in 1981 along with the law.

The legal expression for chaebol is 'Large Business Group,' which is precisely defined in the FTA. The business group is legally designated based on the size, the size being the combined total asset of affiliated companies in the group.[18] From 1987 to 2001, the FTC designated annually the 30 largest chaebols.[19] The firms in the designated 30 chaebols were prohibited from cross shareholdings and also subject to limitations on equity investment in the domestic firms. From 1998, immediately after the outbreak of the financial crisis, these firms were also prohibited from cross debt guarantees among affiliated companies. From 2002, the FTC changed its scheme of designating chaebols. The FTC first designates a group of chaebols that are prohibited from cross shareholding and cross debt guarantees. Legally, these chaebols are termed 'business groups subject to limitation on cross shareholding and cross debt guarantees.' Currently, these are business groups with the combined assets greater than two trillion won.[20] Among these business groups, very large ones are further 'subject to ceiling on total equity investment in other domestic companies.'[21] In our empirical study, chaebol hereafter refers to those family-controlled business groups subject to legal limitations on cross shareholding and cross debt guarantees.

4.1.1   Who are the legal members of chaebols (Inclusion requirements)

A chaebol in the FTA is defined as a business group where "an 'identical person' de facto controls member firms' businesses." An identical person is rather broadly defined to include a controlling shareholder and his or her 'related persons' which in turn includes relatives and affiliated companies. There are two criteria for a de facto control of a company called 'affiliated company': de facto ownership of more than 30 per cent, excluding preferred shares, of a company and de facto exercise of controlling influence on a company. The latter criterion, de facto exercise of controlling influence, in turn is further detailed to include cases of an exchange of directors and managers and also substantial business transactions between a firm directly controlled by an identical person and the company in question. Because this criterion of 'controlling influence' is very broadly interpreted, some companies legally belong to a group even though neither families nor other affiliated companies own shares of those companies.

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[17] For different legal regimes addressing business groups in different countries, see Kraakman et. al. (2004),

[18] For financial and insurance companies of a group, equities replace assets in calculating the total asset of a group. The equity in the FTA refers to paid-in capital or owners' equity, whichever is larger.

[19] Thus, the identity of 30 chaebols changed slightly every year.

[20] Based on the won/dollar exchange rate of 946 on March 9th, 2007, two trillion won amounts to 2.1 billion US dollars.

[21] The threshold asset size of 'very large business groups' used to be five trillion won until 2005 but increased to six trillion won in 2006.

4.1.2   Legal restrictions on chaebols

With the exception of a few business groups with a holding company structure, a business group or chaebol itself is not a legal entity.[22] Once designated by the FTC as a large business group, however, the component firms in the group are subject to a host of legal restrictions that are intended to prevent concentration of economic power. The five major regulations for this purpose are as follows.

Limitations on cross debt guarantees   Non-financial affiliates cannot provide other affiliated companies with financial guarantees for credits supplied by domestic financial institutions. The credits include loans, financial guarantees and underwriting of liabilities such as corporate bonds. Cross debt guarantees were allowed until1997. Witnessing a series of collapses of chaebols, the government introduced this regulation in 1998, immediately after the financial crisis of 1997.

Prohibition of cross shareholding   The Company Law in Korea disallows cross shareholding if a parent company holds more than 50% of a subsidiary company. Even without a parent-subsidiary relationship, voting rights are restricted for those cross shareholdings exceeding a ten per cent level. The FTA applies a much more strict rule to chaebol companies. Cross shareholding among chaebol's affiliates is prohibited. Financial institutions of chaebols are exempt from this regulation, if they invest other people's money in affiliated company shares. These finance companies of chaebols, however, are subject to the following regulation intended to prevent moral hazard.

Restriction of voting rights of shares held by financial institutions   Financial institutions may not exercise voting rights of shares of domestic companies in the same chaebol. There is an important exception which has been subject to recurring debates. For a listed affiliate, financial institutions can exercise voting rights in events such as election of directors, amendment of corporate charters, and M&As, but even for these issues the voting rights exercisable by an 'identical person' including financial institutions cannot exceed 30 per cent.

Ceiling on the total equity investment in domestic companies   A member company of chaebol subject to this particular regulation (currently, chaebols with assets grater than six trillion won) cannot invest more than 25 per cent of its equity in other domestic companies. This regulation, unique and very controversial in Korea, was introduced in 1987 when the Korean government formally started to introduce 'chaebol regulations.' As such, it is viewed by the Korean FTC as a very critical tool for controlling excessive expansion of chaebols

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[22]The holding company structure was legally prohibited until 2000. This prohibition was meant to prevent an excessive expansion of chaebols. Starting in 2001, chaebols have to meet three major legal hurdles in order to adopt a holding company structure: a pure holding company's debt to equity ratio should be less than 100% and its ownership of listed subsidiary and private subsidiary must be over 30% and 50%, respectively. Among the very large chaebols, the LG Group was the first one to adopt the holding company structure in 2003.

through pyramid ownership structures.[23] This regulation was repealed in February 1998, immediately after the outbreak of the financial crisis, to facilitate corporate restructuring of chaebol companies. Witnessing a reoccurrence of rampant expansions of chaebol and facing a growing public criticism against it, the government reintroduced this regulation in April 2001.[24]

This regulation has been one of the most controversial chaebol-related regulations in Korea. Chaebols argue that this regulation hinders active corporate real investments. The Korean FTC reacts that it does hinder a reckless expansion of chaebol families' empire, but not valuable investment projects given a variety of exemptions and exceptions.[25] Facing strong objections from the chaebol community while corporate investments had been sluggish, the government introduced in the FTA the so called 'graduation standards' of the said regulation. If a chaebol meets one of the graduation standards that hinge upon good governance practice and desirable ownership structure, the chaebol becomes exempt from the regulation.

Disclosure requirements   Intra-group transactions are also regulated by the FTA. There are two elements in this regard. When a chaebol affiliate that is subject to limitations on cross debt guarantees and cross shareholdings engages with another member firm in a transaction of an amount greater than either ten percent of the paid-in capital or ten billion won, it has to be approved by the board and thereafter disclosed. In addition, even a private company in a chaebol has to disclose all the major transactions that have potential impact on ownership, governance, financial conditions, and the long term future of the business.

5   Data Description

This section describes the sources for the ownership, accounting and financial data that we use in this study.

5.1   Ownership Data

The ownership data of our study are from Korean Fair Trade Commission (hereafter KFTC). These data contain the stock ownership information for the largest 30 business groups from 1998 to 2001 and the large business groups subject to regulations on cross-shareholding and debt guarantee of affiliates of the same group from 2002 to 2004, which are designated by KFTC. As explained above, KFTC has assigned and supervised the largest 30 business groups from 1987 to 2001 and the large business groups subject to prohibitions on cross-shareholding and debt guarantee from 2002 to now based on the Monopoly Regulation and Fair Trade Act(hereafter Fair Trade Act) and its enforcement ordinance.

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[23]The Korean company law disallows non-voting common stocks or dual class stocks.

[24]Thus, there was a window of three year period during which chaebol was not subject to this particular restriction on equity investment in affiliated companies.

[25]The regulation does not apply to certain categories of investments; for example, investments in a firm belonging to the same industry or a troubled firm needing restructuring.

The largest 30 business groups until 2001 and the business groups under cross-shareholding and debt guarantee prohibition after 2002 should report the status of affiliate shareholders and persons with special interest and the main financial status on April 1 to KFTC until the end of April each year, following Fair Trade Act and its enforcement ordinance. Among the ownership data and financial data which KFTC has kept, we obtained the data for the period 1998-2004. However, we study only business groups with the ownership of a natural man (i.e., family business groups), exclude other business groups such as government-controlled business groups. The ownership structures of 800 companies of 30 groups in 1998, 681 companies of 30 groups in 1999, 518 companies of 25 groups in 2000, 590 companies of 25 groups in 2001, 638 companies of 31 groups in 2002, 739 companies of 35 groups in 2003, and 776 companies of 36 groups in 2004 are available. The total size of firm-years is 4742.

The ownership status of the affiliates and the person with special interest of each firm in the above ownership data of KFTC is recorded relatively in detail. At the time of statement of the shareholder status to KFTC each year, the business group under cross-shareholding and debt guarantee prohibition must have access to KFTC online and report that. In our ownership data, the shareholders are categorized into 7 types; family owner, the relatives of family owner, nonprofit affiliate, affiliate, group officer, treasury stock, and others. In addition, the name, the holding quantity, and the ratio of common stocks and preferred stocks of each individual shareholder are recorded. For example, take the ownership information of Samsung Corporation in Samsung group. In 2004, family owner held 1.42%, relatives of family owner 0.01%, two nonprofit corporations 0.23%, four affiliates 9.64%, thirty seven group officers 0.15%, Samsung Corporation itself 2.20%, and others 86.52% of its common stock.

5.2   Financial data

We take advantage of two databases developed by Korea Listed Companies Association (KLCA) and Korea Investors Service (KIS). KLCA and KIS's databases contain information not only of listed companies, but also some private firms which are subject to external audit. As it stands, KLCA turned out to cover 860 firms and 2994 year-firms that are also included in the ownership sample above, and KIS covers 790 firms and 2780 year-firms. In sum, financial data of 3741 firm-years (which amounts to 73.25% of the firm-years in the ownership data) are available. Our sample contains 3,548 firm-years of ownership data from 1998 to 2004. Out of these firm-years, the accounting data is available for 3,445 of them.

6   Ownership Structure of Korean Chaebols

In this section we provide a detailed description of the ownership structure of the major Korean chaebols in the period of 1998 to 2004. Before we do that, we present some basic statistics that show the importance of chaebols for the Korean economy, and we present an example of the ownership structure of one of the largest chaebols (Hyundai Motor).

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6.1   The Chaebols' Influence in the Korean Economy

As of April in 2004, there were 41 large business groups designated by the Korean FTC. Among these 41 business groups, 36 groups are controlled by families. As noted already, these 36 family controlled groups or chaebols are the subjects of our analysis.

Table 1 shows that these 36 chaebols have 778 affiliated companies, among which 168 companies are listed. The total assets and the total sales of these groups are 622 trillion won and 469 trillion won, respectively.[26] To assess the economic influence of these chaebols, we examine the value added, the employment and the market capitalization. For value added, we examine only 559 manufacturing companies of chaebols. The chaebols account for 14% of the value added of the entire manufacturing sector. The chaebols' 778 companies account for 2.95% of the nation's employment. The chaebol companies, however, account for more than half (52.3%) of the total market value of all listed companies.

Although there are 36 chaebols in 2004, it is the four largest ones that exert a significant influence.[27] Samsung, LG, Hyundai Motor, and SK together account for 8.74% of the value added (of the manufacturing sector), 1.6% of the nation's employment, and 43% of the stock market value.

6.2   An example - Hyundai Motor

Figure 6 shows a summarized picture of the 2004 ownership structure of the Hyundai Motor Chaebol. The total number of firms in the group is 27, but the figure only depicts the ownership relations among 11 of them.

This example is fairly typical of a Korean Chaebol. The individual at the top (Jung Mong Koo in the case of Hyundai Motor) controls some firms directly, with no cross-shareholdings (e.g., Changwon and Glovis), and also several firms that own equity stakes in each other. The structure of cross-ownership is quite complex, and difficult to figure out visually. Perhaps because of this complexity, the existing literature on business groups focused on measuring only a few characteristics of the ownership of firms, such as whether they belong to a group or not, and whether they show indirect (e.g., pyramidal) ownership.

However, these are not the only variables of interest to describe the Chaebol structure. As we discussed in Section 2, we can also compute the specific position of a firm in the Chaebol structure, whether the firm is a part of a cross-ownership loop, and the centrality of a firm for the control of other firms. Importantly, our methodology to compute these variables does not require the researcher to draw the group structure as we have done in Figure 6.[28] Table 2 shows some variables of interest for the firms depicted in Figure 6.

The Table shows that Hyundai Motor, Hyundai Mobis and Kia Motors are the most important firms for the control of the Hyundai Motor Chaebol, given that these are the firms with the highest values for the *centrality* variable. These firms are also among the

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[26]Since the GDP in 2003 was 721 trillion won, the aggregate assets and sales of the 36 chaebols amount to 86.3% and 65.0%, respectively.

[27]Although five chaebols used to be the largest and thus most prominent, there are now four such chaebols after the Daewoo Group collapsed in 1999.

[28]In fact, in order to draw Figure 6, we first looked at the variable that describes the firm's position in the Chaebol structure. This step makes it much easier to figure out the overall structure of the Chaebol, that is, which firms are at the top of the group and which firms are at the bottom.

largest firms in the Chaebol in terms of the number of employees, and they tend to be older as well. In addition, these firms (central, larger, older) are also the ones that are publicly traded (in addition to BNG Steel and INI Steel). The figure shows that these firms indeed hold stakes in several other Chaebol firms. Though it is a bit hard to follow the ownership links with the naked eye, our variable loop show that these central firms are also part of a cross-ownership loop, with 3 firms in it (variable steps). For example, notice that Kia owns 18% of the shares of Mobis, which owns 14% of the shares of Motor, which owns 37% of the shares of Kia. Notice, however, that Jung Mong Koo does not own shares in Kia directly. Therefore, Kia's position in the group structure is lower than those of Motor and Mobis.

The Hyundai Motor Chaebol also illustrates the computation of the two different measures of control. The variable VR (consistent voting rights) simply represents the sum of all direct and indirect family votes in all firms. Notice that this measure is close to 100% for the private firms in the bottom of the group (e.g., Dymos). However, the family itself does not hold large cash flow stakes in these firms (variable Cash flow). As a consequence, the separation between ownership and control measured using VR is extremely large for these firms. However, notice that the variable CC (critical control threshold) is equal to 25% for all firms except those that are owned directly at the top. This is because the control of all group firms that are controlled indirectly depends on the family's control of Hyundai Motor. Thus, the critical control threshold is equal to the family's direct and indirect votes in Hyundai Motor (VR = 25% for Hyundai Motor). In either case, the two measures indicate substantial separation between ownership and control in all but a few firms in the Hyundai Motor group.

6.3   Summary statistics

Table 3 shows the average values for the ownership variables across all firm-years in our sample (Panel A), and the cross-correlation matrix (Panel B). There are a total of 47 groups that were present at any point in the sample between 1998 and 2004, and 1085 firms. The controlling family holds 13% of the cash flows of the median firm, but it holds substantial more votes according to the two alternative measures of voting power. Naturally, the VR (consistent voting rights) measure gives the largest voting power. The family and the affiliate firms hold 68% of the votes of the median firm in the sample. In contrast, the critical control threshold of the median firm is 30%. Thus, the separation between ownership and control is substantially larger if one uses VR to measure voting power. The data also indicate a substantial degree of pyramiding in Korean chaebol firms (the median position of a firm is 2.06), but with substantial variation. Some firms are owned directly (25% of firms show average position lower than 1.40), with few ownership links from other group firms. Finally, only a few firms have positive values for the centrality variable (the 75th percentile is zero), indicating that only a small fraction of group firms holds substantial equity stakes in other firms.

Table 4 reports separate statistics for public (26%) and private (74%) firm-years. Clearly, the family owns larger cash flow stakes in private firms. The variable VR shows that most of the shares not owned by the family in private firms are owned by affiliate firms.[29] As a result,

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[29]Notice that the high values for the variable CVR does not mean that the family owns 100% of the private

the data show greater separation between ownership and control in private than in public firms, if one uses VR to measure voting power. However, separation is similar for private and public firms if one uses CC to measure voting power. This result is easily understood when one recognizes the public firms are much more likely to be central (average centrality = 0.047 versus 0.005 for private firms). As the Hyundai Motor example shows, the variable CC tends to be equal to the VR in the most central firms. Thus, there is less variation in voting power across public and private firms when one uses CC to measure voting power. Finally, notice that as in the Hyundai Motor example public firms are much more likely to be at the top of group (average position = 1.79), while private firms are on average at the bottom (average position = 2.22).

Next, Table 5 (Panels A and B) reports summary statistics separately for firms in cross-shareholding loops, and firms outside them. The first thing to notice is that only 25% of the firm-years participate in cross-shareholding loops. This might be due to Korean regulation, which restricts direct cross-shareholdings. In fact, Panel C shows that the overall majority of cross-shareholding loops has 3 firms in it (72% of all loops). Also, notice that cross-shareholdings are more common among firms that are the top of the group. Finally, firms in cross-shareholding loops are much more likely to be public. Only 14% of private Chaebol firms participate in cross-shareholding loops, versus approximately 60% of public firms.

In order to dig deeper into the correlations among the ownership variables, we also present some regressions of the ownership concentration variables on position, centrality and cross-shareholdings. These regressions allow us to measure the correlation between two variables, while controlling for a third one. For example, the basic statistics in Table 5 suggest that cross-shareholdings are not strongly related to the measures of separation between ownership and control. However, because cross-shareholding loops are more common at the top of the group (where there is less separation), it is important to control for the firm's position in order to measure the relation between loops and separation.

The regressions are presented in Table 6. We find that loops do contribute to lower ownership concentration and higher separation, if one uses the CC measure of voting power. However, we obtain opposite results with the VR measure. Similarly, the relation between centrality and separation between ownership and control depends on the particular separation measure that we use. Clearly, the strongest correlation is between the ownership variables and the average position of the firm. Almost by construction, a firm that is owned through a longer pyramidal chain (higher average position) shows lower ultimate ownership and more separation between ownership and control.

6.3.1   Group-by-group statistics

We have also calculated the ownership variables separately for each one of the 47 groups in our sample. The related tables are omitted for brevity, but are available from the authors. Each group has on average 16 affiliated firms. Out of these firms, an average of 4 firms are public, and an average of 2.93 firms belong to cross-shareholding loops. Also, on average 3

Chaebol firms, as is commonly assumed in the empirical literature on business groups. In fact, most of the shares are owned by other group affiliates. Thus, a complete characterization of the group structure requires data on private firms as well as in the public ones.

firms have a centrality measure greater than 0.01. Finally, if we define direct ownership as a position lower than 1.2, then an average of 3.12 firms are owned directly by the family.

These average statistics also hide substantial variation across groups. For example, a regression of ultimate ownership on group and year dummies produces an R^2 of 42%, suggesting that a substantial fraction of the variation in ownership variables is explained by the group to which the firm belongs to.

6.4   Relating ownership to basic firm characteristics

It is also interesting to measure the correlations between the ownership variables and basic firm characteristics such as size (number of employees), and age (number of years since foundation). To do that, we run some regressions of the ownership variables on size and age, and include group and year dummies in some specifications.

The results on Table 7 show very clearly that both older and larger firms tend to be higher up in the group (smaller average positions). This result holds even after controlling for group dummies, suggesting that this correlation holds within groups as well. Similar results hold for the centrality and loop variables, suggesting that central firms and firms in cross-shareholdings also tend to be larger and older. Regarding the ownership concentration variables, the results are again mixed. In these regressions we also control for the average position of the firm, given the somewhat mechanical link between ownership concentration and position. We find that larger and older firms have lower ultimate ownership, but whether they have larger or smaller separation between ownership and control depends on the measure used. Separation is higher for larger/older firms when we use CC to measure voting power, but lower when we use VR. Notice that these results hold after we control for average position or not. Thus, the negative correlation between size/age and VR separation is not due to the fact that larger and older firms tend to be at the top of the group, where separation between ownership and control is lower.

6.5   Summary: the average structure of a Korean Chaebol

Figure 7 summarizes the analysis above by charting the ownership structure of the average Korean Chaebol. There are roughly three layers in the Chaebol ownership structure. Some firms (firms 1, 2 and 3 in the Figure) are owned directly at the very top of the group (position close to 1), without ownership links to the other firms (like Changwon in the Hyundai Motor example above). The middle layer contains the firms that belong to cross-shareholding loops such as Kia Motors in the example above. The typical loop contains three firms, given the prohibition of direct cross-shareholding links. The firms in this middle layer are more likely to be public, and they are larger and older than other Chaebol firms. The firms in this layer are also the firms that are likely to be central for the group control structure (i.e., they own substantial stakes in other firms in the bottom layer). In this bottom layer, we have firms that are more likely to be private, smaller and younger (i.e., Ajumetal in the Hyundai Motor example). They are also less likely to own substantial stakes in other firms (less central, less cross-shareholdings). The number of firms in this layer of private/non-central/no loop firms is much higher than those in the upper layers (roughly 10 out of the 16 firms). Regarding

ownership concentration, ultimate ownership and separation between ownership and control are naturally higher for the firms at the top of the group.

Nevertheless, we again stress that this average picture hides substantial variation. For example, some public firms (such as BNG Steel in the Hyundai Motor example) do not own shares in other firms. This particular source of variation will be important in the valuation results that we present below.

7   Profitability and Valuation of Chaebol Firms

This section relates the ownership structure of Chaebol firms to their profitability and valuations.

7.1   Accounting issues - the equity method

In order to provide measures of profitability for Korean Chaebol firms, it is important to understand the effect of equity stakes on reported asset and profit figures. Starting in 1999, the financial statements of Korean chaebol firms became subject to the *equity method* reporting rule. Essentially, if firm A owns shares in firm B, firm B's equity and profits will affect reported asset and net income figures for firm A. The basic idea behind the accounting rule is to record firm A's share of firm B's equity as an asset for firm A, and firm A's share of firm B's profits as a source of non-operating income for firm A. The specific accounting rule that guides the calculations of the book value of equity stakes and affiliate profits are quite complex, though. For example, if there are cross-shareholdings among firms A, B and C, the accounting rule does not take the looping nature of the ownership relation into account. If the stakes of A on B and of B on C are taken into account, the accountants will generally assume that C does not own shares in A to break the loop and simplify the calculation. In addition, there are specific rules that determine the exact amount of profits from affiliates that will affect the parent company's profit (details available upon request).

Nevertheless, the financial statements contain enough information to allow anyone to back out the exact amount by which accounting figures have been adjusted. After January 1st, 2003, the item 'stocks accounted in equity method' (code number KLCA 123560) reports the aggregate book value of the shares subject to the equity method. Before 2003, however, 'stocks accounted in equity method' was not separately recorded but pooled into all investment securities. The data are available from the footnotes to financial statements, which we examined to calculate this item for the remaining years. Regarding profits, the profits coming from affiliate companies (call it "equity method profits") are recorded in two items in the non-operating portion of the income statement of parent companies. If equity method profits are positive, they are called "Gain on valuation of Equity Method" (KLCA # 242100). If they are negative, they are called "Loss on valuation of Equity Method" (KLCA # 252600).

With this knowledge, it is easy to adjust the financial statements to back out the values of the accounting figures that refer to each individual Chaebol firm. Specifically, we have:

$$\text{Operating Assets} = \text{Total Assets - Equity Method Stock,} \tag{6}$$

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and:

Operating Profits = Total Profits - Gains from Equity Method + Losses from Equity Method,

(7)

where we define Operating Assets/Profits as the asset/profit values that the Chaebol firm would have in the absence of the equity method adjustment. These asset/profit figures reflect the individual assets and profitability of each Chaebol firm.

One issue with the calculation of operating profits is that one cannot easily back out the tax implications of the equity method adjustments. For example, if affiliate companies provide profits to a parent, the parent's taxes will be higher. However, we do not know exactly how much higher. Thus, in the calculations below, we use a pre-tax measure of profitability to measure each firm's Total Profits that we input in equation 7 (specifically, we use *ordinary income* to measure total profits).

We also check the data for basic consistency requirements. In particular, if the balance sheet shows a number for the equity method stock (i.e., if item KLCA#123560 is non-missing), then there should also be an item in the income statement for gains and losses from equity method (i.e., KLCA#242100 and KLCA#252600 cannot both be missing). The reverse should also hold. In addition, it should not be the case that *both* items KLCA#242100 and KLCA#252600 are positive, since affiliates will either generate a profit or a loss. We eliminate all firm-years that do not satisfy this consistency requirement.

7.2   Profitability and ownership structure

Table 8 reports the summary statistics for the variables used in this Section and the next. Our benchmark measure of profitability is operating ROA, defined as operating profits (as defined in equation 7) divided by operating assets (as defined in equation 6). The statistics for operating ROA are reported in column (1). For comparison, we also report in column (2) a measure of profitability unadjusted for the equity method items (total profits/total assets). The average unadjusted measure overstates average profitability by a small amount. Columns (3) and (4) report the logs of adjusted assets (log of operating assets), and log of total assets. Naturally, operating assets are lower than total assets because of the equity method adjustment (approximately a 10% decrease).

Table 9 displays the regressions that relate profitability to ownership variables and controls. The basic controls that we use are firm age, size measured both by operating assets and number of employees, whether the firm is public or private, leverage, and industry and year dummies. This benchmark model is reported in column (1). Firm age and public status are not related to profitability, but both size variables are positively correlated with operating ROA. The industry classification corresponds roughly to a 2-digit SIC classification in the US, and the industry dummies (there are 45 different industries) are also highly significant. Because our measure of profitability is after interest, leverage has an expected negative correlation with profitability.

The following columns introduce the ownership variables. We first introduce them on their own in the profitability regressions. Ultimate ownership is positively correlated with profitability (columns (2)), while the measures of separation correlate negatively with operating ROA (columns (3) and (4)). Centrality is also negatively related to profits (column

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(6)). Neither average position nor loop are significant in these simple regressions (columns (5) and (7)). Regressions (8) and (9) show that ultimate ownership drives out the separation measures in a horse race. Thus, ultimate ownership seems more strongly correlated with operating performance than the measures of separation between ownership and control. Finally, columns (9) and (10) consider several ownership variables together. The results shows that centrality and ultimate ownership are the variables that are most strongly related to operating performance, even after including group dummies in the regressions (column (10)). Column (10) shows that within each group, central firms and firms with low ultimate ownership have the lowest operating performance. Finally, notice that average position is positively correlated with performance after controlling for ultimate ownership (column (9)). This result might indicate that firms at the bottom of the group have higher performance, which would be a surprising result. However, this correlation disappears after including group dummies. Thus, this positive correlation is more likely due to the fact that groups with firms in lower positions (the largest groups) have higher operating performance.

7.3   Valuation and ownership structure - the parent company discount

We now examine the valuation of group firms, and we show evidence that firms that own substantial stakes in other firms (i.e., central firms) have lower market valuations than other (public) group firms. We call this phenomenon the "parent company discount".[30] Before we go into the regressions, let us describe an example that illustrates the phenomenon.

7.3.1   The SK example

In December 2003, the market capitalization of SK Corporation (the largest oil refinery in Korea) was approximately 2.9 billion dollars. Besides several stakes in private group firms, SK Corporation had a stake of 20% on SK Telecom (the largest mobile telecom company in Korea), which was worth 13.6 billion dollars, and a 39% stake in SK Networks, which was worth 4.3 billion dollars.[31] The value of these equity stakes alone (i.e., assuming a zero value for the stakes in private firms) was 4.4 billion dollars.[32] Thus, the implied equity value of SK corporation's operating assets was -1.5 billion dollars. One possible explanation for SK corporation's negative equity value is that the firm had a large amount of liabilities (book value equal to 8.1 billion dollars). If we add the entire amount of the book liabilities to SK corporation's operating equity value, we obtain a market value of 6.6 billion dollars for the operating assets of SK corporation (i.e., the value of the assets not including the equity stakes in other group firms). For comparison, the book value of the operating assets in December 2003 was 9.75 billion dollars. Thus, SK corporation's market-to-book ratio (or Tobin's Q) was only 0.68 in December 2003.

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[30]Previous literature has analyzed some examples of parent company discounts in the US. Please see the discussion below in Section 7.4.

[31]The ownership data are as of April, 2003.

[32]SK Telecom and SK Networks also own shares in a private firm that owns shares in SK corporation, that is, they belong to a cross-shareholding loop.

This relatively low valuation for SK corporation attracted the interest of an activist investment fund that specializes in emerging market stocks (the Sovereign Fund), which amassed 15% of SK Corp. shares in the market during 2003 and started issuing takeover threats. Sovereign's attack subsequently raised SK Corporation's equity value. As a result, in December 2004 SK corporation's Q had increased to 0.92.[33]

SK corporation was the most central firm in the ownership structure of the SK group (centrality = 0.09, which is in the 92% percentile of our entire sample). Is the low valuation of central firms a pervasive phenomenon in Korean chaebols?

7.3.2   Calculating Q for business group firms

In order to examine the relative valuation of Chaebol firms in our sample, we construct three alternative measures of Q for public Chaebol firms, which differ with respect to the adjustments that we make to take equity stakes in other firms into account. The simplest way to compute Q is to use the observed market value of the equity, and the total assets from the balance sheet (unadjusted Q, Q_{una}):

$$Q_{una} = \frac{EV + \text{Book Liabilities}}{\text{Book Assets}}.$$

The observed equity value EV should in principle incorporate the value of the equity stakes held in other firms. Also, the firm's total book assets includes an accounting adjustment for equity held in other firms, as explained above. Thus, this measure is at least theoretically correct.

Nevertheless, one issue with the measure Q_{una} is that the official accounting adjustment made in Korea (the equity method) might understate the firm's total assets because it ignores the looping nature of cash flows when there are cross-shareholdings (as explained above). To correct for that, we construct our own measure of total book assets using the operating assets calculated as in equation 6, and then using the ownership matrix to construct total assets for each group firm (the procedure is similar to that described in Section 2). We call this measure of assets "consolidated assets". The summary statistics in Table 8 show that this measure of assets produces values that are generally higher than the official assets from the balance sheet. We can then use this alternative measure to compute a second measure of Q:

$$Q_{con} = \frac{EV + \text{Book Liabilities}}{\text{Consolidated Assets}}.$$

One problem with this measure is that the ownership data and the accounting data are generally not for the exact same month. The ownership data always refers to April, while the accounting data generally refers to December. Because of this problem we cannot guarantee that Q_{con} is always a more precise measure than Q_{una}, and use both in the regressions below.

The third alternative is to derive implied operating asset values from the market (as we have done in the SK example above), and then to compare that with book operating assets. This Q measure can be interpreted as the Q that a group firm would have if it were valued

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[33]SK corp's equity value went up to 6 billion dollars, while the value of the equity stakes went up to 4.7 billion. Liabilities were 6.8 billion, and the book value of operating assets was 8.1 billion.

as a stand-alone entity (Q_{sa}):

$$Q_{sa} = \frac{EV + \text{Book Liabilities - Value of equity stakes}}{\text{Operating assets}}.$$

This measure is attractive, but it also suffers from the problem that in general the accounting and the ownership data refer to different months of the year. In the calculations below, as in the SK example, we use the ownership data as of April in year t together with stock market data from the month in which the accounting numbers are reported. For example, we use April 2003 ownership data together with stock market values of December 2003 for firms that report in December. We believe this practice allows for better comparison of market and book values.

Unlike in the SK example, in the Q_{sa} calculations that we present below we do not assume that the equity value of Chaebol private firms is zero. Rather, we use book equity to value the private firms (if book equity is positive). Thus, we assume a market-to-book ratio of one for the private firms. Naturally, the need to value private firms introduces an additional layer of measurement error for Q_{sa}.

7.3.3   Results

Table 8 (discussed above) presents the summary statistics for the new variables introduced in this Section. Most importantly, notice that the three alternative measures of Q produce very similar values, despite the different assumptions used to compute them.[34] There are a total of 886 firm-years available for public firms between 1998 and 2004.

Table 9 presents the regressions that relate Q to ownership variables, using the unadjusted measure of Q, Q_{una}. Our benchmark model includes size (log of the firm's market value of assets),[35] age, operating ROA, leverage, capital expenditures over assets (a control for growth opportunities) and industry dummies. Larger firms and firms with higher growth opportunities have higher valuations. Age is negatively related to valuation. All these coefficients are consistent with what we would expect.

We then introduce the ownership variables. Interestingly, ultimate ownership is *negatively* related to Q. We have also run regressions in which we include the square of ownership, but we find no evidence for a non-linear relationship. The VR measure of separation between ownership and control and average position are not significant. Notice also that the CC measure of separation between ownership and control is negatively related to Q (despite the fact that ultimate ownership is negatively related to Q). The next column shows that consistent with the conjecture in the SK example, central firms seem to have lower valuations than other group firms. Firms that belong to loops are also valued at lower levels, though the effect is not as strong as that estimated for centrality.

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[34]This is consistent with results in Bohren and Michalsen (1994), who compute distortions due to double counting of value of firms with cross stakes in Norway. Valuation metrics such as price-earnings ratio are relatively unaffected by cross-shareholdings, since there is double counting in both the numerator and the denominator. However, French and Poterba (1991) report a substantial effect on cross-shareholdings on price-earning ratios in Japan.

[35]In the regressions with Q_{sa} we use a measure of the value of stand-alone assets (not including equity stakes) as opposed to the value of total assets.

We then consider the joint effect of ownership variables. We include both ultimate ownership and CC separation in these regressions, but the results are similar if we include only of the them. Essentially, the next columns show that the negative correlations between centrality, loop and valuation are robust, even after controlling for the ownership variables and group dummies. The correlations between the ownership variables and valuation disappear after controlling for group dummies, suggesting that they are driven entirely by variation across groups. Thus, it is not the case (for example) that within each group, low ownership firms have higher valuations. Rather, groups with high average ownership have lower valuations. The results are essentially similar if we use the two other alternative measures of Q.

To sum up, there is some evidence that between 1998 and 2004 central firms and firms in cross-shareholding loops have lower valuations than other public Chaebol firms. This effect is not explained by separation between ownership and control in central/loop firms.

7.4   Interpreting the Profitability and Valuation Results

The negative correlation between profitability and ultimate ownership has also been reported by the related literature summarized in Section 1. However, the negative correlation between centrality and profitability is a novel result. In particular, this result coupled with the result above suggests that the most profitable group firms are those that are placed at the top of the group (such that ultimate ownership is high), but which are not central to the control of the group. In terms of the typical ownership structure depicted in Figure 7, the most profitable group firms tend to be those that are owned directly by the family such as firms 1 and 2. These firms are those that are least likely to be part of pyramidal structures.

The big challenge in interpreting these results is to disentangle the direction of causality. Does pyramidal ownership decrease profitability, or does profitability predict the position of the firm in the group? As we discussed in the literature review of Section 1, both possibilities have been contemplated by existing literature. The results that we have obtained so far do not allow us to provide evidence for the direction of causality.

The valuation results suggest that the group firms with the lowest valuations are those that are central to the control of the group, and which belong to cross-shareholding loops. In terms of Figure 5, those are firms 3, 4 and 5. We also find that standard ownership variables are not strongly related to valuation. In particular, it is not the case that firms at the bottom of the group have lower valuations than other group firms. Thus, the evidence in this paper does not support previous findings that pyramidal ownership is negative related to valuation measures. In particular, the valuation results do not support the standard version of the tunneling argument (i.e., Bertrand et al. (2002)), which predicts that the controlling shareholder has incentives divert cash from firms in which ultimate ownership is low, to those in which ultimate ownership is high.

Nevertheless, the lower valuations of central firms are consistent with the theoretical arguments in Almeida and Wolfenzon (2006). Essentially, central firms are those which are used by the family to set up and control other group firms. In Almeida and Wolfenzon's model, the family is more likely to use an existing group firm to set up and control a new firm if the new firm has lower profitability. In contrast, firms with higher profitability tend

to be owned directly by the family.[36] Because of this selection effect, the acquisition of an equity stake on a new firm tends to be a negative NPV investment for minority shareholders of the existing (central) firm. If shareholders of the central firm anticipate that this firm might be used again in the future as a device to set up and acquire other firms, they should anticipate this possibility and discount the shares of the central firms. Thus, this alternative agency-based argument predicts low valuation of central firms, provided that shareholders expect firms that are currently central to continue being used by the family to acquire equity stakes in new firms.

However, this is not the only possible explanation for the discount on central firms. One important characteristic of these firms (and also of firms in cross-shareholding loops) is that they hold substantial stakes in other firms. Furthermore, these stakes might be *non-marketable* for the parent company, in the sense analyzed by Longstaff (1995). If the stakes are necessary to retain control of subsidiary firms, then the parent company might be restricted from selling them. In Longstaff's model, this restriction introduces a discount on the valuation of the security for the investor who holds it but is restricted from selling it, relative to the market value of the security for other investors (such as the minority shareholders of the subsidiary).[37] Thus, the value of the equity stakes held by the parent company could be be lower than the value of an identical stake held by other investors in the subsidiary company.

The finding that central firms have low valuations bear some resemblance to the closed end fund puzzle (see, i.e, Shleifer (2000)). Closed end mutual funds tend to trade at substantial discounts relative to the NAV (net asset value) of the securities in their portfolios.[38] In particular, some of the explanations developed to explain the closed end fund puzzle bear some resemblance to the agency and marketability stories above. It is possible that shareholders of the closed end fund expect poor portfolio management in the future (agency story), or that the closed end fund might hold shares that have trading restrictions such as privately placed stock (marketability story). Nevertheless, not all arguments regarding the closed end fund puzzle seem equally relevant. For example, the investor sentiment story explained in Shleifer (2000) would require individual investors to be more likely to trade shares of the parent company relative to the subsidiaries. There is no reason to expect that condition to hold in the Korean data.

7.4.1   Parent company discounts in the US

Cornell and Liu (2001), Mitchell, Pulvino and Stafford (2002) and Lamont and Thaler (2003) provide some evidence that parent company discounts have also been observed in the US market. For example, in the period of 1985-2000, Mitchell, Pulvino and Stafford (2002) identify 70 firms in which the market value of the equity stake that the parent holds in the subsidiary is higher than the market value of the parent (similarly to the SK example

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[36]Notice that Chaebol firms that are owned by other firms have in fact lower profitability than firms which are controlled directly, as explained above.

[37]In Longstaff's model, the discount comes from the fact that investors have market timing ability, which they cannot be taken advantage of if there is a binding restriction to sell.

[38]See Buysschaert, Deloof and Jegers (2004), for related evidence using data from Belgian holding companies.

above). Lamont and Thaler (2003) show some extreme examples of potential misvaluations (such as the Palm and 3Com example), in which a commitment by the parent to spin-off the shares of the subsidiary at a fixed rate in a future date creates an apparently clear arbitrage opportunity.[39] The standard explanation for this phenomenon in the US is that it is due to noise trading bidding up the prices of the subsidiary stocks,[40] and arbitrage costs that make a price correction difficult.

It is possible that this inefficient markets story is also behind the low valuations of central firms in Korea. However, we believe this story on its own is less likely to explain the Korean parent company discount. First, the Korean phenomenon seems to be more general than the internet bubble-related discounts in the US. It is linked to the characteristics of the ownership structures of business groups, rather than stemming from particular industry characteristics of the subsidiary firms. For example, if we use the same criteria used by Mitchell, Pulvino and Stafford (2002) to identify potential cases of misvaluation, we find 90 firm-years out of a total of 815 in which the market value of equity stakes are larger than the market value of the parent company, 11% of the entire sample.[41] In contrast, all the papers cited above suggest that this phenomenon is rather rare in the US market, partly because it is less common to observe a structure in which both the parent and the subsidiary are publicly traded. In addition, the subsidiaries of central Korean firms are not concentrated in any particular industry. Second, the alternative explanations discussed above (agency and control-related marketability issues) are more likely to hold in Korea than in the US, given the particular governance and ownership characteristics of Korean corporate finance.[42]

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[39] The spin-off fixed a ratio of shares of Palm that each 3Com shareholder would receive (1.5) in one year, subject to SEC approval. However, 3Com traded at a price that was substantially lower than 1.5 times the price of Palm.

[40] A large fraction of the firms analyzed in these studies are in the internet sector.

[41] This calculation assumes that private group firms have a market-to-book ratio of one, as in the calculation of Q_{sa} above. The number of cases is even higher is we use the alternative method used by Mitchell et al., which assumes that the operating equity of the parent should be valued at book levels. We can show that this criteria is equivalent to requiring that $Q_{sa} < 1$, which is true of more than 50% of the sample including firms that do not own stakes in other firms.

[42] Cornell and Liu (2001) discuss agency and liquidity explanations of US parent company discounts, and reject both possibilities in favor of the market inefficiency story above.

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Appendix

Proof of Proposition 3

We need to show $S(\sharp N) = \{i \in N : f_i + \sum\limits_{j \in S(\sharp N),\, j \neq i} s_{ji} \geq T\}$. The proof is divided into a number of steps.

Step 1: $S(\sharp N) = S(\sharp N + 1)$.

Consider two cases: 1) $S(\sharp N) = \varnothing$ and 2) $S(\sharp N) \neq \varnothing$. In case 1), the lemma follows directly from the definition of $S(\sharp N + 1)$. In case 2), we have that, after $\sharp N$ stages, there are firms that are not yet eliminated. Because we started with $\sharp N$ firms, this means that there was a stage $n \leq \sharp N$ such that no firm was dropped. In other words, we have that $S(n) = S(n-1)$. We can now compute $S(n+1) = \{i \in S(n) : f_i + \sum\limits_{j \in S(n),\, j \neq i} s_{ji} \geq T\} = \{i \in S(n-1) : f_i + \sum\limits_{j \in S(n-1),\, j \neq i} s_{ji} \geq T\} = S(n)$, where the first equality follows from $S(n) = S(n-1)$ and the second from the definition of $S(n)$. Analogously, we can show that $S(n) = S(n+1) = S(n+2) = \ldots = S(\sharp N) = S(\sharp N + 1)$. The last equality proves step 1.

Step 2: $S(\sharp N) \subseteq \{i \in N : f_i + \sum\limits_{j \in S(\sharp N),\, j \neq i} s_{ji} \geq T\}$

Note that $S(\sharp N) = S(\sharp N + 1) = \{i \in S(\sharp N) : f_i + \sum\limits_{j \in S(\sharp N),\, j \neq i} s_{ji} \geq T\}$, where the first equality follows from step 1 and the second is simply the definition of $S(\sharp N + 1)$. Because $S(\sharp N) \subseteq N$, it is clear that $i \in S(\sharp N) \Rightarrow i \in \{i \in N : f_i + \sum\limits_{j \in S(\sharp N),\, j \neq i} s_{ji} \geq T\}$.

Step 3: $S(\sharp N) \supseteq \{i \in N : f_i + \sum\limits_{j \in S(\sharp N),\, j \neq i} s_{ji} \geq T\}$

Towards a contradiction, we suppose that $k \in \{i \in N : f_i + \sum\limits_{j \in S(\sharp N),\, j \neq i} s_{ji} \geq T\}$ and $k \notin S(\sharp N)$. The first condition implies that

$$f_k + \sum_{j \in S(\sharp N),\, j \neq i} s_{jk} \geq T. \tag{8}$$

The last condition implies that firm k was eliminated in some earlier stage in the algorithm, say stage n. Thus $k \in S(n-1)$ but $k \notin S(n)$. We now have

$$T > f_k + \sum_{j \in S(n-1),\, j \neq k} s_{jk} \geq f_k + \sum_{j \in S(\sharp N),\, j \neq k} s_{jk}, \tag{9}$$

where the first inequality follows from the fact that firm k was eliminated in round n and the second inequality follows from $S(n-1) \supseteq S(\sharp N)$ and the fact that $s_{ij} \geq 0$. This is a contradiction because Equations 8 and 9 cannot hold at the same time. Putting together steps 2 and 3 leads to the statement of the Proposition. ∎

Proof of Proposition 4

We show that $S(\sharp N) = \bigcup\limits_{i=1}^{M} C_i$. The proof is divided into two steps.

<u>Step 1</u>: $S(\sharp N) \subseteq \bigcup\limits_{i=1}^{M} C_i$

By Proposition 3, we know that $S(\sharp N)$ satisfy condition 3, thus there is a m such that $S(\sharp N) = C_m$. The result follows.

Step 2: $S(\sharp N) \supseteq \bigcup\limits_{i=1}^{M} C_i$

We show that $C_m \subseteq S(\sharp N)$ for all $m = 1 \dots M$. Step 2 follows directly from this. Take a set C_m. Because C_m satisfies condition 3 the following is true:

$$\text{For all } k \in C_m, \; f_k + \sum_{j \in C_m, \; j \neq k} s_{jk} \geq T \tag{10}$$

Towards a contradiction, suppose that some of the firms in C_m are not in $S(\sharp N)$. That is, there must be a stage in the algorithm in which the first firm of C_m is eliminated. Let that stage be n. We then have that $C_m \subseteq S(n-1)$ but there is at least one $k \in C_m$ such that $k \notin S(n)$. We now have that

$$T > f_k + \sum_{j \in S(n-1), \; j \neq k} s_{jk} \geq f_k + \sum_{j \in C_m, \; j \neq k} s_{jk}, \tag{11}$$

where the first inequality follows from the fact that k is eliminated in round n and the second follows from $C_m \subseteq S(n-1)$ and the fact that $s_{jk} \geq 0$. This is a contradiction because Equations 10 and 11 cannot hold at the same time. This proves step 2. Finally, putting together steps 1 and 2 leads to the statement of the Proposition.∎

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Table 1. Summary statistics of Chaebols in 2004

	Group name	# of affiliate [1]	Key Financial Statistics (billion wons)				Value added/GDP 2			Employees			Market Capitalization		
			Assets	Liabilit.	Sales	Net Profits	Firms under cons.	(%)	Σ[3]	persons	(%)	Σ[3]	billion wons	(%)	Σ[3]
1	SAMSUNG	63(14)	191,072	128,416	120,998	7,418	46	3.65	3.65	139,993	0.6	0.6	110,301.1	25.95	25.95
2	LG	46(13)	65,915	38,292	70,940	3,557	31	1.81	5.46	88,826	0.38	0.98	23,346.7	5.49	31.44
3	HYUNDAI MOTOR	27(7)	62,219	37,004	56,602	2,804	22	1.63	7.09	105,699	0.45	1.43	21,919.2	5.16	36.59
4	SK	59(11)	50,696	34,807	49,847	3,838	45	1.65	8.74	29,489	0.13	1.56	27,044.4	6.36	42.96
7	HANWHA	31(5)	42,474	36,850	19,511	1,211	15	0.85	9.59	31,901	0.14	1.69	3,342.6	0.79	43.74
5	HANJIN	23(7)	27,594	20,904	16,770	121	34	0.77	10.36	40,616	0.17	1.87	3,533.1	0.83	44.57
6	LOTTE	36(5)	26,453	11,697	17,417	1,219	18	0.27	10.63	22,688	0.1	1.97	1,538.4	0.36	44.93
8	HYUNDAI HI	6(2)	14,267	10,049	10,611	217	3	0.36	10.99	33,875	0.15	2.11	2,743.6	0.65	45.58
9	KUMHO ASIANA	15(5)	13,915	11,062	8,341	52	14	0.32	11.31	18,174	0.08	2.19	889.9	0.21	45.79
16	TONGYANG	16(4)	13,438	12,399	3,784	-81	14	0.21	11.52	14,360	0.06	2.25	1,221.3	0.29	46.08
11	DONGBU	22(8)	12,143	9,020	7,846	-108	12	0.13	11.65	11,568	0.05	2.3	1,355.5	0.32	46.40
10	DOOSAN	22(6)	9,192	5,975	6,621	54	5	0.17	11.82	7,170	0.03	2.33	1,969.3	0.46	46.86
12	HYUNDAI	7(3)	8,459	6,270	5,483	-111	10	0.19	12.01	14,569	0.06	2.39	4,507.9	1.06	47.92
29	TAEKWANG	37(3)	6,775	4,769	3,359	-30	16	0.19	12.2	8,356	0.04	2.43	1,343.6	0.32	48.24
13	SHINSEGAE	12(5)	5,220	3,026	7,191	373	32	0.16	12.36	14,892	0.06	2.49	2,192.0	0.52	48.75
15	CJ	41(4)	5,174	2,839	5,634	225	6	0.06	12.42	5,566	0.02	2.52	264.8	0.06	48.81
14	LG CABLE	12(5)	5,052	2,862	7,343	126	10	0.2	12.62	6,241	0.03	2.54	1,553.0	0.37	49.18
18	HYOSUNG	16(1)	5,027	3,048	4,926	60	13	0.13	12.75	9,963	0.04	2.59	326.9	0.08	49.26
17	DAELIM	12(3)	4,807	2,354	5,682	299	6	0.17	12.92	3,898	0.02	2.6	1,106.1	0.26	49.52
19	DONGKUK STEEL	8(2)	4,736	2,758	3,580	156	21	0.05	12.97	8,522	0.04	2.64	362.6	0.09	49.60

Table 1. Summary statistics of Chaebols in 2004 (cont.)

	Group name	# of affiliate [1]	Key Financial Statistics (billion wons)				Value added/GDP 2			Employees			Market Capitalization		
			Assets	Liabilit.	Sales	Net Profits	Firms under cons.	(%)	Σ^3	persons	(%)	Σ^3	billion wons	(%)	Σ^3
20	KOLON	31(6)	4,668	2,939	4,194	-137	15	0.1	13.07	8,919	0.04	2.68	813.5	0.19	49.79
24	DONGWON	17(5)	4,634	2,071	1,747	123	7	0.11	13.18	6,112	0.03	2.7	1,184.6	0.28	50.07
21	HYUNDAI DEPT. STORE	17(3)	3,647	1,860	2,674	198	10	0.06	13.24	3,712	0.02	2.72	739.8	0.17	50.24
23	HANSOL	11(5)	3,474	2,249	2,515	-132	8	0.03	13.27	6,944	0.03	2.75	544.3	0.13	50.37
22	KCC	10(2)	3,419	1,384	2,452	240	8	0.03	13.3	2,197	0.01	2.76	354.3	0.08	50.46
25	TAIHAN ELECTRIC WIRE	11(3)	3,036	1,828	1,568	73	21	0.1	13.4	4,071	0.02	2.77	394.4	0.09	50.55
26	SEAH	36(3)	2,975	1,183	2,267	158	14	0.08	13.48	3,466	0.02	2.79	524.8	0.12	50.67
27	YOUNG POONG	20(3)	2,885	1,282	2,850	31	8	0.08	13.56	4,092	0.02	2.81	1,002.6	0.24	50.91
28	HYUNDAI DEVELOPMENT	12(1)	2,784	1,385	3,080	219	23	0.03	13.59	5,111	0.02	2.83	282.4	0.07	50.97
30	BOOYOUNG	4(0)	2,452	2,130	595	11	5	0.01	13.6	973	0	2.83	na	0.00	50.97
31	NONGSHIM	12(3)	2,369	1,024	2,669	233	11	0.08	13.68	8,257	0.04	2.87	1,613.8	0.38	51.35
32	HITE	12(1)	2,329	1,339	995	100	7	0.06	13.74	2,004	0.01	2.88	1,595.3	0.38	51.73
33	DAESUNG	40(4)	2,322	1,303	2,371	80	21	0.05	13.79	3,964	0.02	2.89	242.4	0.06	51.79
34	DCC	19(4)	2,287	1,170	2,270	79	13	0.06	13.85	4,387	0.02	2.91	332.6	0.08	51.86
35	HANKOOK TIRE	7(2)	2,095	916	2,008	104	7	0.09	13.94	5,419	0.02	2.94	1,577.0	0.37	52.24
36	SAMYANG	8(3)	2,033	761	2,140	96	8	0.06	14	2,200	0.01	2.95	297.2	0.07	52.31
	Total	778(161)	622,037	409,224	468,880	22,876	559	14		688,194	2.95		222,361.1	52.31	

Footnotes 1 The number in each parenthesis refers to listed affiliates.   **Sources:** Value added : KIS-Line Service   Employees : KFTC

2 Manufactuing firms and GDP of the manufacturing sector.   GDP(manufacturing) : Bank of Korea   Working populations : Korean Statistical Information System

3 Σ refers to cumulative proportions.   Market Capitalization : Korea Exchange

Table 2. Hyundai Motor's ownership structure.

Firm	Ult. Own	VR	CC	Position	Loop	Steps
Glovis	100.0%	100.0%	100.0%	1.0	0	0
Changwon	58.2%	67.6%	57.0%	1.0	0	0
INI Steel	10.4%	32.6%	25.0%	1.3	1	3
Hyundai Mobis	9.8%	35.2%	25.0%	1.3	1	3
Hyundai Motor	7.1%	25.0%	25.0%	1.4	1	3
Hyundai Capital	14.9%	93.1%	25.0%	1.6	1	3
BNG Steel	9.1%	60.7%	25.0%	1.9	0	0
Kia Motors	4.2%	47.6%	25.0%	2.4	1	3
World Industries	5.1%	90.5%	25.0%	2.8	0	0
Dymos	5.5%	97.8%	25.0%	2.8	0	0
Ajumetal	3.8%	72.7%	25.0%	3.8	0	0

Firm	Centrality	Type	Employ	Age	Industry
Glovis	4	private	196	3	Other Transport
Changwon	0	private	195	30	Fabr. Metals
INI Steel	4	listed	4329	50	Basic metals
Hyundai Mobis	12	listed	3924	27	Motor Vehicles
Hyundai Motor	13	listed	52542	37	Motor Vehicles
Hyundai Capital	0	private	1059	11	Fin. Institution
BNG Steel	0	listed	544	38	Basic metals
Kia Motors	9	listed	31432	60	Motor Vehicles
World Industries	0	private	1624	28	Motor Vehicles
Dymos	0	private	875	5	Motor Vehicles
Ajumetal	0	private	204	31	Basic metals

Table 3. Summary statistics, ownership structure

Panel A. Basic statistics

All firms	Mean	StDev	Median	25%	75%	Firm-years
Ultimate ownership	0.21	0.22	0.13	0.05	0.28	3548
VR	0.68	0.28	0.68	0.47	1.00	3548
CC	0.33	0.19	0.30	0.19	0.43	3548
Separation VR	0.47	0.29	0.44	0.23	0.73	3548
Separation CC	0.12	0.11	0.12	0.03	0.19	3548
Average Position	2.11	0.82	2.06	1.40	2.56	3548
Centrality	0.02	0.05	0.00	0.00	0.00	3524
					No.Firms	1085
					No.Groups	47

Panel B: Correlation table

	Ult Own	Separ CC	Separ VR	Av Pos	Public	Centrality
Separ CC	-0.5031					
Separ VR	-0.4186	0.2749				
Av Pos	-0.517	0.5437	0.5953			
Public	-0.1602	0.0606	-0.4357	-0.2305		
Centrality	0.1063	0.0614	-0.2462	-0.2593	0.3708	
Loop	-0.0636	-0.0351	-0.1984	-0.1831	0.419	0.2145

Table 4. Summary statistics for ownership variables: Public versus private firms.

Panel A: Public firms

	Mean	StDev	Median	25%	75%	Firm-years
Ult. ownership	0.15	0.14	0.10	0.04	0.23	922
VR	0.40	0.20	0.37	0.25	0.51	922
CC	0.28	0.15	0.27	0.17	0.36	922
Separation VR	0.25	0.17	0.23	0.13	0.35	922
Separation CC	0.13	0.10	0.13	0.06	0.19	922
Average Position	1.79	0.72	1.71	1.15	2.17	922
Centrality	0.05	0.08	0.01	0.00	0.05	915

Panel B: Private firms

	Mean	StDev	Median	25%	75%	Firm-years
Ult. ownership	0.23	0.24	0.15	0.06	0.32	2626
VR	0.77	0.24	0.87	0.53	1.00	2626
CC	0.35	0.20	0.31	0.19	0.45	2626
Separation VR	0.54	0.29	0.53	0.34	0.79	2626
Separation CC	0.11	0.12	0.11	0.02	0.19	2626
Average Position	2.22	0.82	2.16	1.67	2.68	2626
Centrality	0.005	0.02	0.00	0.00	0.00	2609

Table 5. Summary statistics for ownership variables: Firms in loops

Panel A: Firms in loops

	Mean	StDev	Median	25%	75%	Firm-years
Ult. ownership	0.19	0.19	0.13	0.05	0.26	893
VR	0.55	0.30	0.50	0.29	0.86	893
CC	0.30	0.17	0.27	0.17	0.40	893
Separation VR	0.37	0.27	0.27	0.16	0.53	893
Separation CC	0.11	0.10	0.11	0.03	0.18	893
Average Position	1.85	0.77	1.69	1.22	2.29	893
Centrality	0.034	0.06	0.01	0.00	0.04	885

Panel B: Firms not in loops

	Mean	StDev	Median	25%	75%	Firm-years
Ult. ownership	0.22	0.23	0.14	0.05	0.30	2655
VR	0.72	0.27	0.75	0.50	1.00	2655
CC	0.34	0.20	0.30	0.19	0.43	2655
Separation VR	0.50	0.29	0.48	0.28	0.76	2655
Separation CC	0.12	0.12	0.12	0.03	0.19	2655
Average Position	2.20	0.82	2.14	1.66	2.64	2655
Centrality	0.01	0.04	0.00	0.00	0.00	2639

Panel C. Number of firms in loop

Firms in loop	Frequency	Percent
2	87	9.74
3	641	71.78
4	118	13.21
5	34	3.81
6	11	1.23
7	1	0.11
8	1	0.11
Total	893	

Table 6. Relations among ownership characteristics

	Ultimate Ownership		Dependent variable Separation (Control defined as CC)		Separation (Control defined as VR)	
	(1)	(2)	(3)	(4)	(5)	(6)
Loop	-0.046*** (0.009)	-0.085*** (0.008)	-0.013*** (0.005)	0.008** (0.004)	-0.105*** (0.011)	-0.054*** (0.009)
Central	0.564*** (0.077)	-0.013 (0.067)	0.165*** (0.039)	0.482*** (0.033)	-1.248*** (0.097)	-0.494*** (0.083)
Av. Pos		-0.153*** (0.004)		0.084*** (0.002)		0.200*** (0.005)
Observations	3524	3524	3524	3524	3524	3524
R-squared	0.02	0.30	0.01	0.34	0.08	0.37

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 7. Ownership variables and firm characteristics

	Dependent variable						
	Av pos	Loop	Central	Ultimate Ownership	Ultimate Ownership	Separation (VR)	Separation (CC)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Firm age	-15.481***	12.197***	1.233***	0.038	-2.472***	-3.244***	0.788***
	(0.876)	(0.511)	(0.089)	(0.236)	(0.220)	(0.299)	(0.115)
No employees	-0.190***	0.199***	0.021***	-0.021***	-0.051***	-0.058***	0.019***
	(0.026)	(0.020)	(0.003)	(0.005)	(0.006)	(0.008)	(0.003)
Av position					-0.162***	0.199***	0.078***
					(0.005)	(0.006)	(0.002)
Group FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3548	3548	3524	3548	3548	3548	3548
R-squared	0.30	0.34	0.25	0.32	0.56	0.47	0.51

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 8. Summary statistics of accounting and financial variables

	Mean	StDev	Median	25%	75%	Firm-years
Op return on assets	0.02	0.11	0.03	-0.01	0.08	2976
Return on assets	0.02	0.11	-0.01	0.03	0.09	2976
Op assets (million USD)	708	2544	72	16	400	3445
Assets (million USD)	772	2735	75	17	434	3445
Firm age	16.8	14.3	13.0	4.0	26.0	3445
No employees	1203	3769	198	44	845	3445
Quna	0.92	0.32	0.85	0.74	1.00	886
Qcon	0.91	0.34	0.84	0.72	1.00	886
Qsa	0.91	0.36	0.84	0.72	1.01	870
Consolidated assets (million USD)	775	2727	82	18	436	3445
Mkt value of equity (million USD)	2077	5044	737	235	1997	886
Stand alone mkt value of equity (million USD)	1901	4693	694	226	1878	870
Capital expenditures/operating assets	0.06	0.15	0.03	0.01	0.07	2592
Leverage	0.21	0.28	0.15	0.04	0.30	2636

Note: The variables are defined in the text.

Table 9. Operating profitability and ownership variables

	Dependent variable: Operating return on assets										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
firm age	-0.214 (0.176)	-0.375** (0.179)	-0.257 (0.177)	-0.248 (0.179)	-0.244 (0.178)	-0.135 (0.181)	-0.176 (0.183)	-0.371** (0.179)	-0.369** (0.179)	-0.194 (0.189)	0.000 (0.208)
Ln(assets)	0.004* (0.002)	0.005** (0.002)	0.004* (0.002)	0.004* (0.002)	0.004* (0.002)	0.004* (0.002)	0.004* (0.002)	0.005** (0.002)	0.005** (0.002)	0.007*** (0.002)	0.005** (0.002)
No employees	0.021*** (0.006)	0.020*** (0.006)	0.020*** (0.006)	0.021*** (0.006)	0.020*** (0.006)	0.022*** (0.006)	0.021*** (0.006)	0.020*** (0.006)	0.020*** (0.006)	0.023*** (0.006)	0.020*** (0.006)
Public	-0.006 (0.006)	-0.002 (0.006)	-0.010* (0.006)	-0.004 (0.006)	-0.006 (0.006)	-0.005 (0.006)	-0.005 (0.006)	-0.002 (0.006)	0.001 (0.006)	0.003 (0.006)	0.003 (0.006)
Leverage	-0.095*** (0.016)	-0.096*** (0.016)	-0.095*** (0.016)	-0.094*** (0.016)	-0.095*** (0.016)	-0.095*** (0.016)	-0.095*** (0.016)	-0.096*** (0.016)	-0.096*** (0.016)	-0.094*** (0.016)	-0.092*** (0.018)
Ult ownership		0.060*** (0.011)						0.066*** (0.013)	0.067*** (0.013)	0.087*** (0.014)	0.063*** (0.016)
Loop							-0.005 (0.005)			-0.007 (0.005)	-0.000 (0.005)
Central						-0.077** (0.031)				-0.126*** (0.033)	-0.135*** (0.039)
Av pos					-0.003 (0.003)					0.010** (0.004)	0.004 (0.005)
Separation (CC)				-0.039** (0.019)				0.023 (0.022)			
Separation (VR)			-0.019** (0.009)						0.011 (0.011)		
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Group FE	No	No	No	No	No	No	No	No	No	No	Yes
Observations	2634	2634	2634	2634	2634	2611	2634	2634	2634	2611	2611
R-squared	0.15	0.16	0.15	0.15	0.15	0.15	0.15	0.16	0.16	0.17	0.25

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 10. Valuation and ownership variables

	Dependent variable: Tobin's Q								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Firm age	-5.007***	-4.908***	-5.029***	-5.010***	-4.977***	-4.406***	-4.914***	-4.460***	-4.532***
	(0.801)	(0.796)	(0.818)	(0.804)	(0.804)	(0.779)	(0.796)	(0.782)	(0.898)
Ln(assets)	0.074***	0.069***	0.074***	0.074***	0.075***	0.082***	0.079***	0.077***	0.087***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.011)
OROA	0.270	0.289	0.270	0.267	0.267	0.230	0.270	0.266	0.355*
	(0.195)	(0.199)	(0.195)	(0.193)	(0.196)	(0.197)	(0.195)	(0.199)	(0.208)
Capital exp	0.436***	0.445***	0.435***	0.418**	0.439***	0.420**	0.437***	0.418***	0.341**
	(0.165)	(0.167)	(0.165)	(0.164)	(0.165)	(0.165)	(0.164)	(0.163)	(0.153)
Leverage	0.064	0.067	0.066	0.073	0.073	0.080	0.065	0.088	0.029
	(0.120)	(0.118)	(0.121)	(0.118)	(0.121)	(0.119)	(0.119)	(0.112)	(0.109)
Ult ownership		-0.233***						-0.294**	-0.137
		(0.063)						(0.078)	(0.128)
Loop							-0.037*	-0.047**	-0.043*
							(0.022)	(0.022)	(0.027)
Central						-0.500***		-0.283***	-0.339***
						(0.104)		(0.115)	(0.126)
Av pos					0.024				
					(0.015)				
Separation (CC)				-0.248***				-0.0392**	-0.092
				(0.087)				(0.103)	(0.130)
Separation (VR)			-0.019						
			(0.061)						
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Group FE	No	No	No	No	No	No	No	No	Yes
Observations	815	815	815	815	815	808	815	808	808
R-squared	0.41	0.42	0.41	0.42	0.41	0.42	0.41	0.44	0.53

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
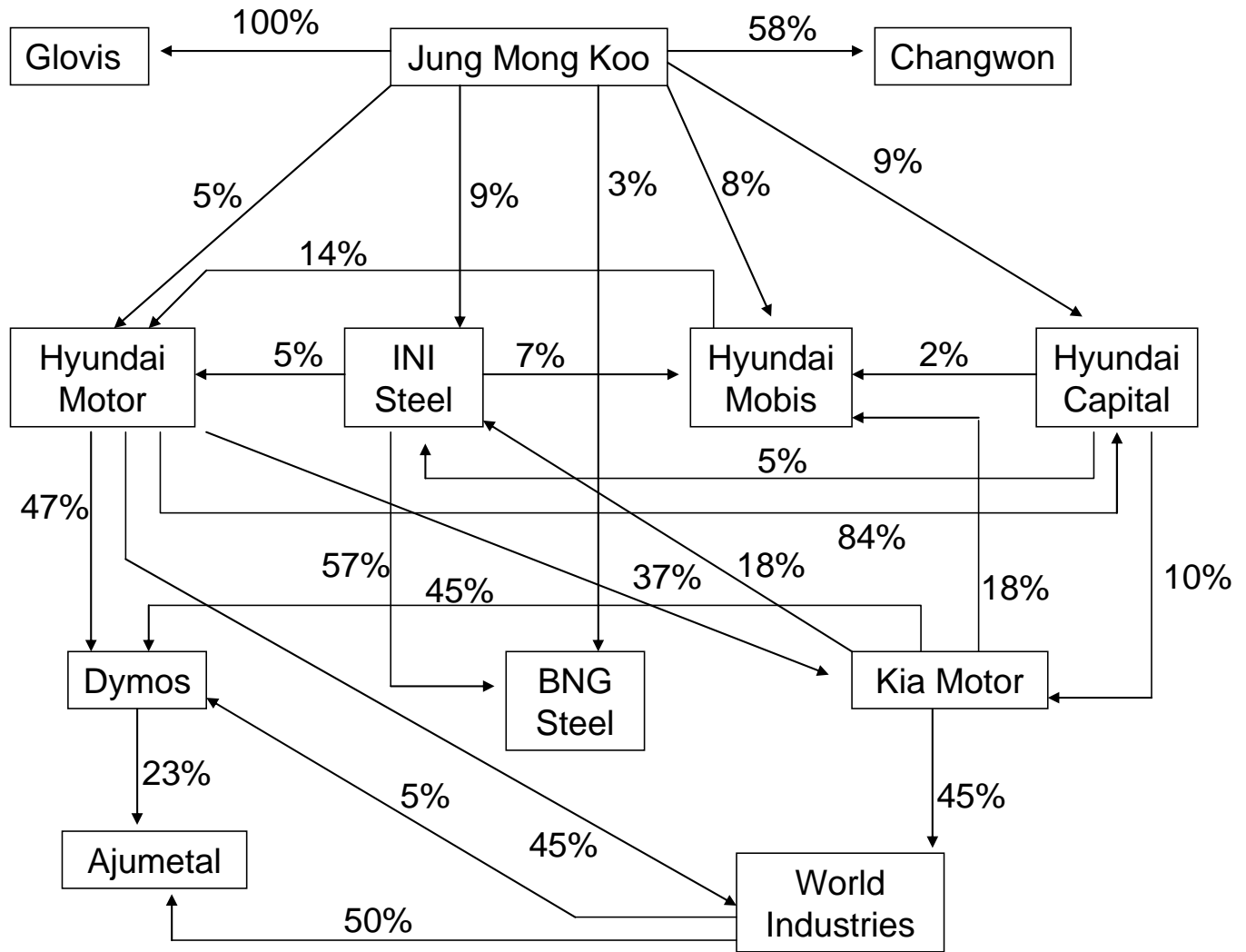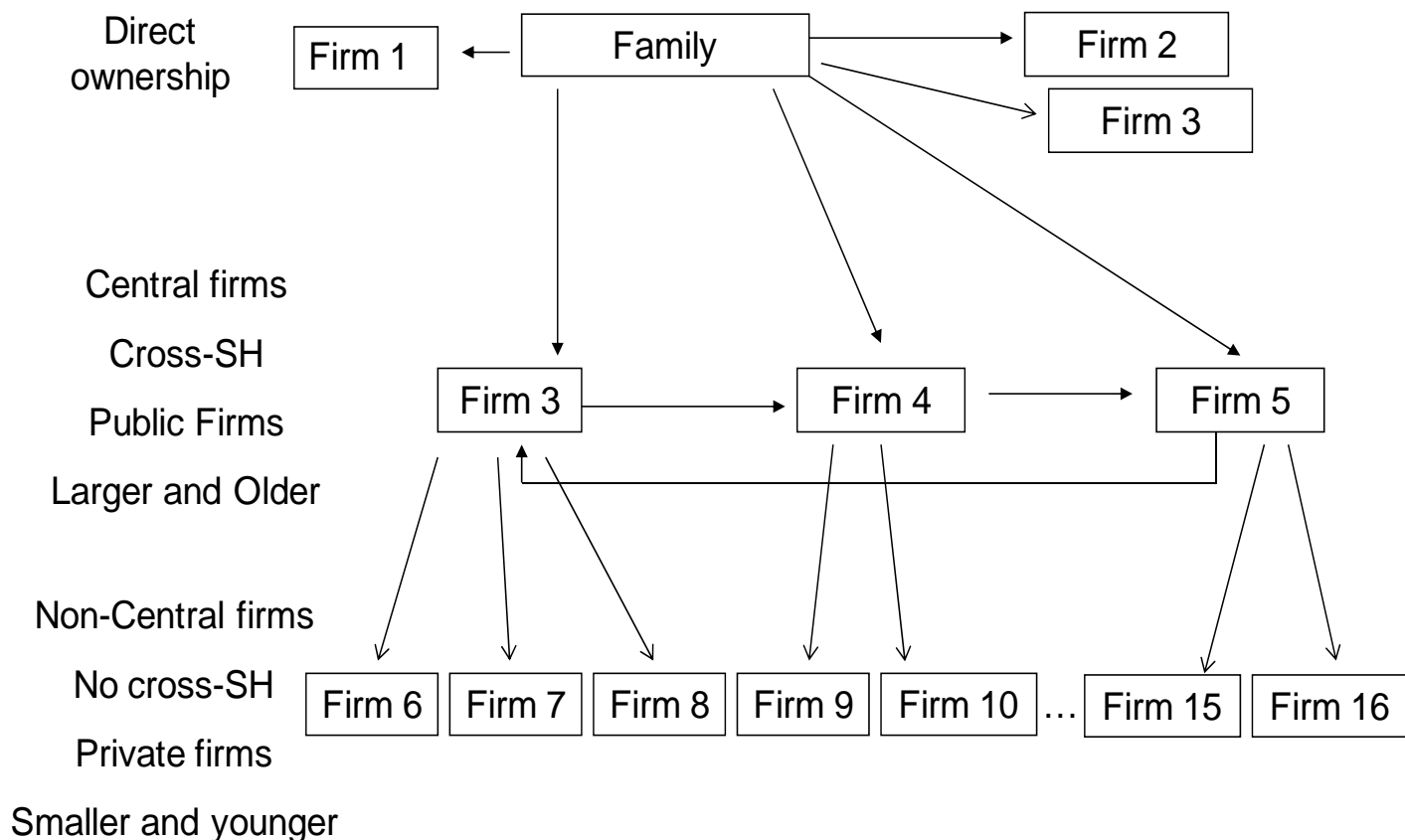
Figure 6. Ownership Structure of Hyundai Motor in 2004.

Figure 7. Average Ownership Structure of a Korean Chaebol, 1998-2004

Direct ownership

Central firms

Cross-SH

Public Firms

Larger and Older

Non-Central firms

No cross-SH

Private firms

Smaller and younger

Firm 1   Family   Firm 2   Firm 3

Firm 3   Firm 4   Firm 5

Firm 6   Firm 7   Firm 8   Firm 9   Firm 10 … Firm 15   Firm 16

Average group: 16 firms, 3 central firms, 3 firms with direct ownership, 4 public firms, 3 firms in loops